

Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	6/19/2018
Applicant/Owner:	PLP			Sampling Point:	HDR3004_18
Investigators:	MS MD	Landform (hillslope, terrace, etc.):	Footslope		
Local Relief (concave, convex, none):	None	Slope(%):	3	HGM:	N/A
Subregion (LRR):	X	Lat:	59.886684	Long:	-155.438736
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-6							N/A	Organic	hor:Oi
6-18	2.5Y2.5/1	100					No	Silt Loam	hor:A
18-21	7.5YR2.5/1	70					No	Silt Loam	hor:B
18-21	10YR2/2	30					No	Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: <input type="checkbox"/> None	
Depth (inches): _____	
Field Drainage Class: <input type="checkbox"/> MWD - Moderately Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: 40% angular gravels throughout the A and B horizons.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <input type="text" value="1.0"/>	
Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <input type="text"/>	
Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <input type="text" value="20.0"/>	
(includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Surface water due to recent precipitation.

Geomorphic Position:

## Additional Reference Data: Photos

HDR3004\_18



Photo Name: Photo\_180619142025



Photo Name: Photo\_180619142243



Photo Name: Photo\_180619142018





**Photo Name:** Photo\_180619142044



**Photo Name:** Photo\_180619142032



**Photo Name:** Photo\_180619142151

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/19/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3005_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>0</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.886448</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1C</u>	

Vegetation Type: Closed Willow Low Shrub (CWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes      No X (If No, explain in Remarks)

Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No     

Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>    </u>
Hydric Soil Present? Yes <u>X</u> No <u>    </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>    </u>		

Remarks: CWLS. Light green with brown underneath is wetland. Dark green is upland (tall willow). HGM slope. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>7</u> <u>Multiply by:</u> <u>7</u>
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	OBL species <u>7</u> x1= <u>7</u>
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	FACW species <u>6</u> x2= <u>12</u>
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	FAC species <u>104</u> x3= <u>312</u>
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	FACU species <u>    </u> x4= <u>    </u>
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	UPL species <u>    </u> x5= <u>    </u>
Total Cover: <u>60</u>				Column Totals: <u>117</u> (A) <u>331</u> (B)
50% of total cover: <u>30</u>				<u>Prevalence Index = B/A= 2.83</u>
20% of total cover: <u>12</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	<u>    </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex pluriflora</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	<u>    </u> data in Remarks or on a separate sheet)
5. <u>Anemone richardsonii</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Caltha palustris</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	
7. <u>Valeriana capitata</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Viola epipsila</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Rumex arcticus</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover: <u>57</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>    </u>
50% of total cover: <u>28.5</u>				
20% of total cover: <u>11.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>70</u>		
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-20							N/A	Organic	hor:Oi

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b> Type: None Depth (inches): Field Drainage Class: PD - Poorly Drained	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b> Surface Water Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    3.0 Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    0.0 Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    0.0 (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Small depressions that hold surface water.

Geomorphic Position:





Photo Name: Photo\_180619150557



Photo Name: Photo\_180619150638



Photo Name: Photo\_180619150651



## Additional Reference Data: Photos

HDR3005\_18



**Photo Name:** Photo\_180619150625



**Photo Name:** Photo\_180619150550



**Photo Name:** Photo\_180619150603

Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	6/20/2018
Applicant/Owner:	PLP			Sampling Point:	HDR3007_18
Investigators:	MS MD	Landform (hillslope, terrace, etc.):	Hillslope		
Local Relief (concave, convex, none):	None	Slope(%):	7	HGM:	N/A
Subregion (LRR):	X	Lat:	59.885590	Long:	-155.437622
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A	Organic	hor:Oi
4-13	10YR2/1	100					No	Silt Loam	hor:A 50% Gravels/cobbles
13-20	7.5YR3/3	100					No	Sandy Loam	hor:B 70% Gravels/course Sand

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b> Type: <input type="checkbox"/> None Depth (inches): _____ Field Drainage Class: <input type="checkbox"/> MWD - Moderately Well Drained	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>
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Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input type="checkbox"/> X <input type="checkbox"/> No <input type="checkbox"/> Depth (inches):    14.0 Saturation Present?    Yes <input type="checkbox"/> X <input type="checkbox"/> No <input type="checkbox"/> Depth (inches):    13.0 (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3007\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Artemisia arctica	2	No	NL
Lycopodium annotinum s.l.	1	No	FACU

Additional Reference Data: Photos

HDR3007\_18



Photo Name: Photo\_180619160311



Photo Name: Photo\_180619160245



## Additional Reference Data: Photos

HDR3007\_18



**Photo Name:** Photo\_180619160250



**Photo Name:** Photo\_180619160216



**Photo Name:** Photo\_180619160232



Photo Name: Photo\_180619160324

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 6/20/2018  
 Applicant/Owner: PLP Sampling Point: HDR3008\_18  
 Investigators: MS MD Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): Concave Slope(%): 6 HGM: Slope  
 Subregion (LRR): X Lat: 59.884312 Long: -155.435959 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1C

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Drainage feature fed by snow pack 30-50 ft wide. DEST-H with high percentage of forbs. HGM Slope. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
Total Cover: <u>      </u>				<b>Prevalence Index worksheet:</b>
50% of total cover: <u>0</u>				
20% of total cover: <u>0</u>				
<b>Sapling/Shrub Stratum</b>				
1. <u>Vaccinium uliginosum</u>	40	Yes	FAC	Total % Cover of: <u>      </u> Multiply by:
2. <u>Salix pulchra</u>	25	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Empetrum nigrum</u>	15	No	FAC	FACW species <u>1</u> x2= <u>2</u>
4. <u>Salix reticulata</u>	15	No	FAC	FAC species <u>118</u> x3= <u>354</u>
5. <u>Betula nana</u>	5	No	FAC	FACU species <u>1</u> x4= <u>4</u>
6. <u>Rhododendron tomentosum</u>	1	No	FAC	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>102</u>				Column Totals: <u>120</u> (A) <u>360</u> (B)
50% of total cover: <u>51</u>				Prevalence Index = B/A= <u>3.00</u>
20% of total cover: <u>20.4</u>				
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	5	Yes	FAC	<b>Hydrophytic Vegetation Indicators:</b>
2. <u>Carex bigelowii</u>	5	Yes	FAC	X Dominance Test is >50%
3. <u>Equisetum arvense</u>	5	Yes	FAC	X Prevalence Index is ≤3.0
4. <u>Ranunculus sp.</u>	1	No		Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)
5. <u>Festuca altaica</u>	1	No	FAC	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Anemone narcissiflora</u>	1	No	FACU	
7. <u>Sanguisorba canadensis</u>	1	No	FACW	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>19</u>				
50% of total cover: <u>9.5</u>				
20% of total cover: <u>3.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>      </u>				
% Cover of Wetland Bryophytes <u>      </u>				
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-9							N/A	Organic	hor:Oi
9-13	10YR2/1	100					N/A	Silt Loam	hor:B
13-20	10YR2/1	100					N/A	Sandy Loam	hor:B/C 95% Cobbles

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type:   None		
Depth (inches):		
Field Drainage Class:   SPD - Somewhat Poorly Drained		

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    6.0		
Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    0.0		
Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    0.0		
(includes capillary fringe)		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Vaccinium vitis-idaea</u>	<u>1</u>	<u>No</u>	<u>FAC</u>

Additional Reference Data: Photos

HDR3008\_18



Photo Name: Photo\_180619165951



Photo Name: Photo\_180619170050

## Additional Reference Data: Photos

HDR3008\_18



**Photo Name:** Photo\_180619170005



**Photo Name:** Photo\_180619170021



**Photo Name:** Photo\_180619165945





**Photo Name:** Photo\_180619165957

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 6/20/2018  
 Applicant/Owner: PLP Sampling Point: HDR3009\_18  
 Investigators: MS MD Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): None Slope(%): 4 HGM: Slope  
 Subregion (LRR): X Lat: 59.884411 Long: -155.435593 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: On plot 3PP3898. DEST-H. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Empetrum nigrum</u>	65	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
2. <u>Vaccinium uliginosum</u>	8	No	FAC	FACW species <u>2</u> x2= <u>4</u>
3. <u>Betula nana</u>	5	No	FAC	FAC species <u>131</u> x3= <u>393</u>
4. <u>Rhododendron tomentosum</u>	5	No	FAC	FACU species <u>3</u> x4= <u>12</u>
5. <u>Salix pulchra</u>	5	No	FAC	UPL species <u>      </u> x5= <u>      </u>
6. <u>Vaccinium vitis-idaea</u>	5	No	FAC	Column Totals: <u>136</u> (A) <u>409</u> (B)
Total Cover: <u>96</u>				<u>Prevalence Index = B/A=</u> <u>3.01</u>
50% of total cover: <u>48</u>				<b>Hydrophytic Vegetation Indicators:</b>
20% of total cover: <u>19.2</u>				<u>X</u> Dominance Test is >50%
<u>Herb Stratum</u>				<u>      </u> Prevalence Index is ≤3.0
1. <u>Carex bigelowii</u>	35	Yes	FAC	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
2. <u>Equisetum arvense</u>	3	No	FAC	data in Remarks or on a separate sheet)
3. <u>Rubus chamaemorus</u>	2	No	FACW	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>40</u>				<sup>1</sup> Indicators of hydric soil and wetland hydrology
50% of total cover: <u>20</u>				must be present, unless disturbed or problematic.
20% of total cover: <u>8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>      </u>				<b>Hydrophytic</b>
% Cover of Wetland Bryophytes <u>5</u>	% Cover of Bryophytes <u>45</u>			<b>Vegetation</b>
(Where applicable)				Yes <u>X</u> No <u>      </u>
				<b>Present?</b>

Remarks:  
 Trace: Dry exp, San can, Arn sp., Ped cap, Ang luc, Bis plu, Art arc, Lyc ann, Tri eur, Str amp, Ane nar, Cor sue, Pic gla, And pol, Arc alp, Cal can, Eri ang.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-9							N/A	Organic	hor:Oi
9-11	2.5Y3/2	90	2.5YR3/6	10	C	PL	No	Silt Loam	hor:A
11-18	2.5Y4/3	20					No	Silt Loam	hor:B Frozen. 10 % Gravels.
11-18	5Y3/1	80					No	Silt Loam	hor:B Frozen. 10 % Gravels.
18-21	10YR3/3	100					N/A	Silt Loam	hor:B 20% Gravels.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):					
Type:	Seasonal Frost.				
Depth (inches):	11		Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Field Drainage Class:	SPD - Somewhat Poorly Drained				

Remarks: Hard layer of frost at 11". Perches water table well into growing season. Once it melts likely drains quickly. Hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input checked="" type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:				
Surface Water Present?	Yes	<u>      </u>	No	<u>  X  </u> Depth (inches): <u>                    </u>
Water Table Present?	Yes	<u>  X  </u>	No	<u>      </u> Depth (inches): <u>          9.0          </u>
Saturation Present?	Yes	<u>  X  </u>	No	<u>      </u> Depth (inches): <u>          7.0          </u>
(includes capillary fringe)				
<div><div>Wetland Hydrology Present?</div><div>Yes <u>  X  </u> No <u>      </u></div></div>				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Water table perched on seasonal frost for more than 2 weeks of growing season.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3009\_18

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Spiraea stevenii</u>	<u>3</u>	<u>No</u>	<u>FACU</u>

Additional Reference Data: Photos

HDR3009\_18



Photo Name: Photo\_180620093452



Photo Name: Photo\_180620093519





**Photo Name:** Photo\_180620093531



**Photo Name:** Photo\_180620093435



**Photo Name:** Photo\_180620093428



Photo Name: Photo\_180620093409

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/20/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3010_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>4</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.884315</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NW1 Classification: <u>PSS1/3B</u>	

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>3PP3900. DEST-H. HGM SLOPE. Wetter than normal antecedent precipitation</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Vaccinium uliginosum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>2</u> <u>Multiply by:</u>
2. <u>Salix pulchra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>2</u> x1= <u>2</u>
3. <u>Betula nana</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>3</u> x2= <u>6</u>
4. <u>Empetrum nigrum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	FAC species <u>130</u> x3= <u>390</u>
5. <u>Rhododendron tomentosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>Salix reticulata</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>94</u>				Column Totals: <u>135</u> (A) <u>398</u> (B)
50% of total cover: <u>47</u>				<u>Prevalence Index = B/A=</u> <u>2.95</u>
20% of total cover: <u>18.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Carex pluriflora</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus chamaemorus</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>41</u>				
50% of total cover: <u>20.5</u>				
20% of total cover: <u>8.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>      </u>				
% Cover of Wetland Bryophytes <u>      </u>				
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A	Organic	hor:Oi
5-13							N/A	Organic	hor:Oe
13-20									hor:C *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:			Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):					
Field Drainage Class:	SPD - Somewhat Poorly Drained				

Remarks: \*3: Loose Gravels with Some Organics Mixed In Throughout. Color of gravels is variegated.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	6.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	3.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	0.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Surface water present in low areas.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR3010\_18

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Vaccinium vitis-idaea	2	No	FAC
Andromeda polifolia	1	No	FACW
Salix fuscescens	1	No	FACW

Additional Reference Data: Photos

HDR3010\_18



Photo Name: Photo\_180620103939



Photo Name: Photo\_180620103945



## Additional Reference Data: Photos

HDR3010\_18



Photo Name: Photo\_180620103950



Photo Name: Photo\_180620104008



Photo Name: Photo\_180620104027



Photo Name: Photo\_180620103957

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/20/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3012_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>4</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u> Lat: <u>59.883823</u>	Long: <u>-155.440063</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1C</u>	

Vegetation Type: Closed Willow Low Shrub (CWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>Green in polygon is CWLS. Brownish green is DEST-H. Entire polygon is wetland. Wetter than normal antecedent precipitation</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u>
2. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>5</u> x2= <u>10</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>109</u> x3= <u>327</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>85</u>				Column Totals: <u>114</u> (A) <u>337</u> (B)
50% of total cover: <u>42.5</u>				<u>Prevalence Index = B/A=</u> <u>2.96</u>
20% of total cover: <u>17</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex bigelowii</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Valeriana capitata</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Equisetum arvense</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Anemone richardsonii</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Rubus stellatus</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>29</u>				<b>Hydrophytic Vegetation</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>14.5</u>				
20% of total cover: <u>5.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Present?</b>
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>5</u>				
% Cover of Bryophytes <u>80</u>				
(Where applicable)				

Remarks: Trace: Vac vit, Ele mag, Poa arc, Luz par, Res alt, Nne nar, Rum arc, Aco del, Vio lan, Cla sar, Ped lan, Car ang, Mic hie, Arn sp., Ste sit, Ang luc, Ped sud, Pet fri, Mic nel, Sen lug, Pol acu, Cha ang, Ach mill, Ver eri. Water 5%.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A	Organic	hor:Oi
5-19							N/A	Organic	hor:Oe Cobbles/gravels Start At 13".
19-22	2.5Y3/2	100					No	Silt Loam	hor:B Coarse Sand 20%, Gravels 10%.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b> Type: None Depth (inches): Field Drainage Class: PD - Poorly Drained	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b> Surface Water Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    6.0 Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    0.0 Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    0.0 (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Lots of diffuse surface and subsurface flow through area.

Geomorphic Position:





Photo Name: Photo\_180620121221



Photo Name: Photo\_180620121202



Photo Name: Photo\_180620121231





**Photo Name:** Photo\_180620121208



**Photo Name:** Photo\_180620121245



**Photo Name:** Photo\_180620121215

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/20/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3013_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>6</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.881992</u>	Long: <u>-155.447647</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>PSS1C</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	

Remarks: OWLS. Entire polygon is wetland. HGM is slope. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Salix pulchra</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>15</u> x1= <u>15</u>
2. <u>Vaccinium uliginosum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>21</u> x2= <u>42</u>
3. <u>Empetrum nigrum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>147</u> x3= <u>441</u>
4. <u>Salix reticulata</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACU species <u>20</u> x4= <u>80</u>
5. <u>Betula nana</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>203</u> (A) <u>578</u> (B)
Total Cover: <u>67</u>				<u>Prevalence Index = B/A=</u> <u>2.85</u>
50% of total cover: <u>33.5</u>				
20% of total cover: <u>13.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Calamagrostis canadensis</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
4. <u>Valeriana capitata</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>Gymnocarpium dryopteris</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
6. <u>Carex pluriflora</u>	<u>10</u>	<u>No</u>	<u>OBL</u>	
7. <u>Anemone richardsonii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. <u>Carex bigelowii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
9. <u>Cornus suecica</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
10. <u>Veratrum viride</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>136</u>				
50% of total cover: <u>68</u>				
20% of total cover: <u>27.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>1</u>				
% Cover of Wetland Bryophytes <u>10</u>				
% Cover of Bryophytes <u>80</u>				
(Where applicable)				

Remarks:

Trace: Vac vit, Luz par, Pri pum, Ane nar, Sen tri, Fri cam, Ped lan, Lyc ann, Lis cor, Ped ver, Mic hie, Cal pal, Plantathera sp., Sen lug, Arn sp., Ger eri, Ach mill, Vio epi, Vio gla, Eri per, Dry exp, Aco del, Str amp, Rho int, Cha ang, Lag gla, Ped sud, Pet fri, Ath fel, Pol acu, Ane par. Water 5%. Rock 1%.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-8							N/A	Organic	hor:Oi
8-20	2.5Y3/1	100					No	Sandy Loam	hor:A
20-23	10YR5/4	100					No	Sandy Loam	hor:B/C 20 % Coarse Sand

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type: None			
Depth (inches):			
Field Drainage Class: PD - Poorly Drained			
		<b>Hydric Soil Present?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		
Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 6.0		
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 0.0		
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 0.0 (includes capillary fringe)		
		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Lots of surface and subsurface flow downslope. Very wet.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3013\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Pyrola asarifolia	5	No	FACU
Eriophorum anqustifolium	5	No	OBL
Angelica lucida	2	No	FACU
Lupinus arcticus	2	No	FACU
Heracleum maximum	1	No	FACU
Viola langsdorffii	1	No	FACW

Additional Reference Data: Photos

HDR3013\_18



Photo Name: Photo\_180620132800



Photo Name: Photo\_180620132750

## Additional Reference Data: Photos

HDR3013\_18



**Photo Name:** Photo\_180620132826



**Photo Name:** Photo\_180620132744



**Photo Name:** Photo\_180620132815





**Photo Name:** Photo\_180620132736

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 6/20/2018  
 Applicant/Owner: PLP Sampling Point: HDR3014a\_18  
 Investigators: MS MD Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): Concave Slope(%): 4 HGM: Slope  
 Subregion (LRR): X Lat: 59.881420 Long: -155.448242 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: OWLS. Entire polygon is wetland. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Vaccinium uliginosum</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Salix pulchra</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Empetrum nigrum</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	FACW species <u>1</u> x2= <u>2</u>
4. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>137</u> x3= <u>411</u>
5. <u>Salix reticulata</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>Vaccinium vitis-idaea</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>112</u>				Column Totals: <u>138</u> (A) <u>413</u> (B)
50% of total cover: <u>56</u>				Prevalence Index = B/A= <u>2.99</u>
20% of total cover: <u>22.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>8</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Calamagrostis canadensis</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus chamaemorus</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>26</u>				
50% of total cover: <u>13</u>				
20% of total cover: <u>5.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>25</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>85</u>				<b>Present?</b>
(Where applicable)				

Remarks:

Trace: And pol, Ane ric, Ane nar, Bis plu, Ped lab, Rho int, Ped cap, Mic nel, Ang luc, Arn les, Luz par.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-14							N/A	Organic	hor:Oi
14-20	2.5Y3/2	100					No	Sandy Loam	hor:A
20-22	10YR4/6	90					No	Sandy Loam	hor:B/C *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		
Type: None		
Depth (inches):		
Field Drainage Class: PD - Poorly Drained		
	<b>Hydric Soil Present?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Remarks: \*3: 10 % Organics, 40% Gravels/sand

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		
<b>Field Observations:</b>					
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	2.0		
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	0.0		
(includes capillary fringe)				<b>Wetland Hydrology Present?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:



## Additional Reference Data: Photos

HDR3014a\_18



**Photo Name:** Photo\_180620144054



**Photo Name:** Photo\_180620144049



**Photo Name:** Photo\_180620144039



## Additional Reference Data: Photos

HDR3014a\_18



Photo Name: Photo\_180620144034



Photo Name: Photo\_180620144124



Photo Name: Photo\_180620144104

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/21/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3017_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>8</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.884438</u>	Long: <u>-155.460464</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Closed Alder – Willow Tall Shrub (CAWTS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: <u>CAWTS. Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				<b>Prevalence Index worksheet:</b> Total % Cover of: <u>      </u> Multiply by: <u>      </u> OBL species <u>      </u> x1= <u>      </u> FACW species <u>3</u> x2= <u>6</u> FAC species <u>123</u> x3= <u>369</u> FACU species <u>37</u> x4= <u>148</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>163</u> (A) <u>523</u> (B)
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix pulchra</u>	65	Yes	FAC	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Alnus sinuata</u>	25	Yes	FAC	
3. <u>Spiraea stevenii</u>	10	No	FACU	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>100</u>				
50% of total cover: <u>50</u>		20% of total cover: <u>20</u>		
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	25	Yes	FAC	
2. <u>Gymnocarpium dryopteris</u>	15	Yes	FACU	
3. <u>Dryopteris expansa</u>	10	No	FACU	
4. <u>Equisetum arvense</u>	2	No	FAC	
5. <u>Equisetum sylvaticum</u>	2	No	FAC	
6. <u>Micranthes nelsoniana</u>	2	No	FAC	
7. <u>Viola epipsila</u>	2	No	FAC	
8. <u>Epilobium angustifolium</u>	2	No	FACU	
9. <u>Sanguisorba canadensis</u>	2	No	FACW	
10. <u>Senecio triangularis</u>	1	No	FACW	
Total Cover: <u>63</u>				
50% of total cover: <u>31.5</u>		20% of total cover: <u>12.6</u>		
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>1</u> % Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>35</u> (Where applicable)				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Remarks:

Trace: Rub ste, Lyc ann, Lis cor, Ane ric, Str amp, Car umb, Chr tet, Ste sit, Ang luc, Ver vir, Tri eur, Pet fri, Rum arc, Hup myo.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A	Organic	hor:Oi
4-6	10YR4/3	100					N/A	Silt Loam	hor:A
6-10	7.5YR3/2	100					N/A	Silt Loam	hor:B
10-17	10YR3/1	40					N/A	Silt Loam	hor:B
10-17	10YR4/4	60					N/A	Silt Loam	hor:B
17-20	10YR3/3	100					N/A	Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches):	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Lots of roots. Cobbles starting at 9".

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Dry. Lots of streams through polygon. Documented all streams along transect.

Geomorphic Position:



**Photo Name:** Photo\_180620162307



**Photo Name:** Photo\_180620162316



**Photo Name:** Photo\_180620162354





Photo Name: Photo\_180620162256



Photo Name: Photo\_180620162246



Photo Name: Photo\_180620162417



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/21/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3020_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>10</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.871696</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1B</u>	

Vegetation Type: Closed Alder – Willow Low Shrub (CAWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil X or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: <u>Recent heavy rain. On point 3PP6447. CAWLS. HGM slope. Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u>
2. <u>Alnus sinuata</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Spiraea stevenii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	FACW species <u>6</u> x2= <u>12</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>155</u> x3= <u>465</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>25</u> x4= <u>100</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>77</u>				Column Totals: <u>186</u> (A) <u>577</u> (B)
50% of total cover: <u>38.5</u>				<u>Prevalence Index = B/A=</u> <u>3.10</u>
20% of total cover: <u>15.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Dryopteris expansa</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	Prevalence Index is ≤3.0
3. <u>Equisetum sylvaticum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Gymnocarpium dryopteris</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
5. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Equisetum arvense</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
7. <u>Thelypteris phegopteris</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Micranthes nelsoniana</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Valeriana capitata</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Veratrum viride</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>109</u>				
50% of total cover: <u>54.5</u>				
20% of total cover: <u>21.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>20</u>				
(Where applicable)				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				
Remarks: <u>Trace: Vib edu, Car pod, Aco del, Vio lan, Pol acu, Pet fri, Ste sit, Car umb, Ane ric, Ang luc, Tri eur, Lyc ann, Lis cor, Str amp, Vio epi, Ver eri, Ado mos.</u>				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A	Organic	hor:Oi
5-7	10YR4/2	100					N/A	Silt Loam	hor:A
7-17	2.5Y3/2	85	5YR4/6	15	C	PL	No	Silt Loam	hor:B
17-22	10YR3/4	100					No	Silt Loam	hor:B Cobbles 20%

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)		<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)		<input checked="" type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)		<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)		and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)		<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____ Field Drainage Class: SPD - Somewhat Poorly Drained	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No    _____
---	---

Remarks: Dug multiple holes. Large boulders at 12" in other pits. Pushes water to surface (water table at 5"). Only area where we could get 20" pit. Described driest pit. Hydrophytic vegetation and multiple primary indicators for hydrology.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b> Surface Water Present?    Yes <input checked="" type="checkbox"/> No    _____    Depth (inches):    2.0 Water Table Present?    Yes <input checked="" type="checkbox"/> No    _____    Depth (inches):    12.0 Saturation Present?    Yes <input checked="" type="checkbox"/> No    _____    Depth (inches):    7.0 (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No    _____
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Lots of small streams running down hillside. Small depressions with water that are vegetated on the bottom (typically not inundated but are currently inundated due to the wet conditions).

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3020\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Epilobium angustifolium	1	No	FACU
Senecio trianquularis	1	No	FACW

Additional Reference Data: Photos

HDR3020\_18



Photo Name: Photo\_180621094852



Photo Name: Photo\_180621094900



## Additional Reference Data: Photos

HDR3020\_18



Photo Name: Photo\_180621094956



Photo Name: Photo\_180621094911



Photo Name: Photo\_180621095027



Photo Name: Photo\_180621094905

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 6/21/2018  
 Applicant/Owner: PLP Sampling Point: HDR3023\_18  
 Investigators: MS MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 10 HGM: N/A  
 Subregion (LRR): X Lat: 59.882526 Long: -155.463043 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra (DEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	
Remarks: <u>DEST. Wetter than normal antecedent precipitation</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Empetrum nigrum</u>	40	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Vaccinium uliginosum</u>	20	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix pulchra</u>	15	No	FAC	FACW species <u>      </u> x2= <u>      </u>
4. <u>Salix reticulata</u>	10	No	FAC	FAC species <u>113</u> x3= <u>339</u>
5. <u>Betula nana</u>	5	No	FAC	FACU species <u>1</u> x4= <u>4</u>
6. <u>Rhododendron tomentosum</u>	3	No	FAC	UPL species <u>1</u> x5= <u>5</u>
Total Cover: <u>95</u>				Column Totals: <u>115</u> (A) <u>348</u> (B)
50% of total cover: <u>47.5</u>				<u>Prevalence Index = B/A=</u> <u>3.03</u>
20% of total cover: <u>19</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Festuca altaica</u>	8	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	5	Yes	FAC	Prevalence Index is ≤3.0
3. <u>Carex bigelowii</u>	5	Yes	FAC	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Anemone narcissiflora</u>	1	No	FACU	data in Remarks or on a separate sheet)
5. <u>Hierochloe alpina</u>	1	No	NL	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>20</u>				
50% of total cover: <u>10</u>				
20% of total cover: <u>4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>35</u>				<b>Present?</b>
(Where applicable)				
Remarks:				
Trace: Dry ala, Car spe, Poa arc, Equ arv, Luz noo, Ang luc, Cla sar, Bis plu, Vio lan, Ped lab, Rho int, Art arc, Val cap, Lag gla, Equ syl, Arn sp., Lyc ann, Tri eur, Cam las, Ste lon, Mic nel, Aco del, Vio bif, Pol acu, Rub ste, Gen gla, lichen.				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A	Organic	hor:Oi
4-7	10YR2/2	100					No	Silt Loam	hor:B
7-14	10YR4/4	100					No	Silt Loam	hor:B
14-19	10YR3/2	100					No	Silt Loam	hor:B1 Frozen. Seasonal Frost.
19-22	10YR3/4	100					No	Silt Loam	hor:B2 30% Cobbles.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type:	<u>Seasonal Frost</u>	
Depth (inches):	<u>14</u>	
Field Drainage Class:	<u>MWD - Moderately Well Drained</u>	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:				Secondary Indicators (2 or more required)								
Primary Indicators (minimum of one required; check all that apply)				Water-stained Leaves (B9)								
<input type="checkbox"/>	Surface Water (A1)		<input type="checkbox"/>	Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/>	Drainage Patterns (B10)					
X	High Water Table (A2)		<input type="checkbox"/>	Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)					
X	Saturation (A3)		<input type="checkbox"/>	Marl Deposits (B15)		<input type="checkbox"/>	Presence of Reduced Iron (C4)					
<input type="checkbox"/>	Water Marks (B1)		<input type="checkbox"/>	Hydrogen Sulfide Odor (C1)		<input type="checkbox"/>	Salt Deposits (C5)					
<input type="checkbox"/>	Sediment Deposits (B2)		<input type="checkbox"/>	Dry Season Water Table (C2)		<input type="checkbox"/>	Stunted or Stressed Plants (D1)					
<input type="checkbox"/>	Drift Deposits (B3)		<input type="checkbox"/>	Other (Explain in Remarks)		<input type="checkbox"/>	Geomorphic Position (D2)					
<input type="checkbox"/>	Algal Mat or Crust (B4)					X	Shallow Aquitard (D3)					
<input type="checkbox"/>	Iron Deposits (B5)					<input type="checkbox"/>	Microtopographic Relief (D4)					
<input type="checkbox"/>	Surface Soil Cracks (B6)					<input type="checkbox"/>	FAC-Neutral Test (D5)					
<b>Field Observations:</b>						<b>Wetland Hydrology Present?</b> Yes      X      No <input type="checkbox"/>						
Surface Water Present?	Yes	<input type="checkbox"/>	No	X	Depth (inches):							<input type="text" value="4.0"/>
Water Table Present?	Yes	X	No	<input type="checkbox"/>	Depth (inches):							<input type="text" value="2.0"/>
Saturation Present?	Yes	X	No	<input type="checkbox"/>	Depth (inches):							<input type="text" value="2.0"/>
(includes capillary fringe)												

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Recent heavy rainfall. Slope likely drains rapidly after rainfall events. Seasonal frost is also perching water.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Vaccinium vitis-idaea</u>	<u>2</u>	<u>No</u>	<u>FAC</u>

Additional Reference Data: Photos

HDR3023\_18



Photo Name: Photo\_180621125158



Photo Name: Photo\_180621125235



**Photo Name:** Photo\_180621125147



**Photo Name:** Photo\_180621125227



**Photo Name:** Photo\_180621125254





**Photo Name:** Photo\_180621125152

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/21/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3024_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>10</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.882671</u>	Long: <u>-155.462891</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	
Hydric Soil Present? Yes <u>      </u> No <u>X</u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		Yes <u>      </u> No <u>X</u>
Remarks: <u>OWLS. FT007. Wetter than normal antecedent precipitation</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		<b>Prevalence Index worksheet:</b> Total % Cover of: <u>      </u> Multiply by: OBL species <u>      </u> x1= <u>      </u> FACW species <u>1</u> x2= <u>2</u> FAC species <u>121</u> x3= <u>363</u> FACU species <u>5</u> x4= <u>20</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>127</u> (A) <u>385</u> (B)  Prevalence Index = B/A= <u>3.03</u>
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix pulchra</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
3. <u>Empetrum nigrum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
4. <u>Salix reticulata</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
5. <u>Vaccinium uliginosum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>62</u>				
50% of total cover: <u>31</u>		20% of total cover: <u>12.4</u>		
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
1. <u>Calamagrostis canadensis</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Gymnocarpium dryopteris</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
3. <u>Carex bigelowii</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
4. <u>Rhodiola integrifolia</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
5. <u>Sanguisorba canadensis</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>65</u>				
50% of total cover: <u>32.5</u>		20% of total cover: <u>13</u>		
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>      </u> % Cover of Bryophytes <sup>8</sup> <u>      </u> (Where applicable)				

Remarks: Trace: Rho tom, Fes alt, Poa arc, Cor sue, Equ syl, Rub cha, Ang luc, Ger eri, Ane nar, Ane ric, Art arc, Mic nel, Val cap, Equ arv, Pol acu, Dry exp, Car ang, Pet fri, Tri eur, Vio bif, Cla sar, Ste lon, Car pod, Vio epi, Sen lug, Lag gla, Ach mill, Rub ste.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A	Silt Loam	hor:Oi
4-19	10YR4/3	100					No	Silt Loam	hor:B1
19-22	5Y4/2	80	5YR4/6	20	C	M	No	Silt Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b>	Yes	No	X
Type: _____					
Depth (inches): _____					
Field Drainage Class: MWD - Moderately Well Drained					

Remarks: Slope likely drains rapidly.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b>	Yes	X	No
Surface Water Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): 1.0				
Water Table Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): 0.0				
Saturation Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): 0.0				
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Heavy recent rainfall.

Geomorphic Position:



**Photo Name:** Photo\_180621134231



**Photo Name:** Photo\_180621134211



**Photo Name:** Photo\_180621134216







Photo Name: Photo\_180621134247



Photo Name: Photo\_180621134224



Photo Name: Photo\_180621134308

Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	6/21/2018
Applicant/Owner:	PLP			Sampling Point:	HDR3025_18
Investigators:	MS MD	Landform (hillslope, terrace, etc.):	Hillslope		
Local Relief (concave, convex, none):	None	Slope(%):	7	HGM:	Slope
Subregion (LRR):	X	Lat:	59.883286	Long:	-155.467606
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	PSS1B		



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-8							N/A	Organic	hor:Oi
8-20	10YR3/2	100					No	Silt Loam	hor:B/C 80% Cobbles.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____ Field Drainage Class: PD - Poorly Drained	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b> Surface Water Present?    Yes <input checked="" type="checkbox"/> No    _____    Depth (inches):    3.0 Water Table Present?    Yes <input checked="" type="checkbox"/> No    _____    Depth (inches):    0.0 Saturation Present?    Yes <input checked="" type="checkbox"/> No    _____    Depth (inches):    0.0 (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Recent heavy rainfall.

Geomorphic Position:

## Additional Reference Data: Photos

HDR3025\_18



Photo Name: Photo\_180621145608



Photo Name: Photo\_180621145650



Photo Name: Photo\_180621145600





**Photo Name:** Photo\_180621145615



**Photo Name:** Photo\_180621145620



**Photo Name:** Photo\_180621145636



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 6/21/2018  
 Applicant/Owner: PLP Sampling Point: HDR3026\_18  
 Investigators: MS MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 6 HGM: N/A  
 Subregion (LRR): X Lat: 59.882652 Long: -155.468582 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra (DEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	
Remarks: <u>DEST Wetter than normal antecedent precipitation</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<b>Prevalence Index worksheet:</b> <u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u> OBL species <u>      </u> x1= <u>      </u> FACW species <u>      </u> x2= <u>      </u> FAC species <u>102</u> x3= <u>306</u> FACU species <u>      </u> x4= <u>      </u> UPL species <u>2</u> x5= <u>10</u> Column Totals: <u>104</u> (A) <u>316</u> (B)  <i>Prevalence Index = B/A=</i> <u>3.04</u>
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				
50% of total cover: <u>0</u>			20% of total cover: <u>0</u>	
<u>Sapling/Shrub Stratum</u>				
1. <u>Vaccinium uliginosum</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% <u>      </u> Prevalence Index is ≤3.0 <u>      </u> Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Empetrum nigrum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Salix pulchra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
5. <u>Vaccinium vitis-idaea</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
6. <u>Dryas octopetala</u>	<u>2</u>	<u>No</u>	<u>NL</u>	
Total Cover: <u>98</u>				
50% of total cover: <u>49</u>			20% of total cover: <u>19.6</u>	
<u>Herb Stratum</u>				
1. <u>Carex microchaeta</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic</b> <b>Vegetation</b> Yes <u>X</u> No <u>      </u> <b>Present?</b>
2. <u>Festuca altaica</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>6</u>				
50% of total cover: <u>3</u>			20% of total cover: <u>1.2</u>	
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>15</u>				
(Where applicable)				

Remarks:  
 Trace: Loi pro, Sal phl, Hie alp, Poa arc, Cal can, Arc lat, Ped cap, Bis plu, Ang luc, Rho int, Tri eur, Art arc, Ane nar, Min arc, Ran tur. Lichen 5%.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A	Silt Loam	hor:Oi
4-6	7.5YR3/2	100					N/A	Silt Loam	hor:A
6-12									hor:C 100% Cobbles.
12-20	10YR4/2	65	5YR3/4	35	C	M	N/A	Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____ Field Drainage Class: MWD - Moderately Well Drained	<b>Hydric Soil Present?</b> Yes    No <input checked="" type="checkbox"/>
---	---

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:				Secondary Indicators (2 or more required)				
Primary Indicators (minimum of one required; check all that apply)				Water-stained Leaves (B9)				
<input type="checkbox"/> Surface Water (A1)			<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)			<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)			<input type="checkbox"/> Marl Deposits (B15)			<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)			<input type="checkbox"/> Hydrogen Sulfide Odor (C1)			<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)			<input type="checkbox"/> Dry Season Water Table (C2)			<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)			<input type="checkbox"/> Other (Explain in Remarks)			<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)						<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)						<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)						<input type="checkbox"/> FAC-Neutral Test (D5)		
<b>Field Observations:</b>				<b>Wetland Hydrology Present?</b> <b>Yes</b> <input checked="" type="checkbox"/> <b>No</b> <input type="checkbox"/>				
Surface Water Present?	Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Depth (inches):					<input type="checkbox"/>
Water Table Present?	Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Depth (inches):					<input type="checkbox"/> 13.0
Saturation Present?	Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Depth (inches):					<input type="checkbox"/> 11.0
(includes capillary fringe)								

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Heavy recent rainfall.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3026\_18

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Arctostaphylos alpina	1	No	FAC
Rhododendron tomentosum	1	No	FAC
Salix arctica	1	No	FAC

Additional Reference Data: Photos

HDR3026\_18



Photo Name: Photo\_180621160058



Photo Name: Photo\_180621160138





**Photo Name:** Photo\_180621160152



**Photo Name:** Photo\_180621160104



**Photo Name:** Photo\_180621160051

Photo Name: Photo\_180621160039



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/22/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3027_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>5</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u> Lat: <u>59.882774</u>	Long: <u>-155.469604</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1B</u>	

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		

Remarks: OWLS. Snow is recently gone. Plants are newly emerged. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>5</u> <u>Multiply by:</u>
2. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>5</u> x1= <u>5</u>
3. <u>Salix reticulata</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>Empetrum nigrum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>129</u> x3= <u>387</u>
5. <u>Betula nana</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>82</u>				Column Totals: <u>134</u> (A) <u>392</u> (B)
50% of total cover: <u>41</u>				<u>Prevalence Index = B/A=</u> <u>2.93</u>
20% of total cover: <u>16.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Eriophorum angustifolium</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Festuca altaica</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>52</u>				
50% of total cover: <u>26</u>				
20% of total cover: <u>10.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>5</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>80</u>				<b>Present?</b>
(Where applicable)				

Remarks: Lichens 4%. Water 6%. Trace: And pol, Loi pro, Cal can, Arn lat, Ane nar, Ane par, Pyr gra, Ane ric, Art arc, Val cap, Ped cap, Ped lan, Lup noo, Hup hal, Mic hie, Lag gla, Ran tur, Lyc ann, Ped lab, San can, Arn sp.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-8							N/A	Organic	hor:Oi
8-20	10YR2/2	50					No	Sandy Loam	hor:B/C 75% Cobbles.
8-20	10YR3/3	50					No	Sandy Loam	hor:B/C 75% Cobbles.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type:   None		
Depth (inches):		
Field Drainage Class:   PD - Poorly Drained		

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    6.0		
Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    3.0		
Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    0.0		
(includes capillary fringe)		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Water in vegetated depressions. Recent heavy rainfall.

Geomorphic Position:



**Photo Name:** Photo\_180621165215



**Photo Name:** Photo\_180621165206

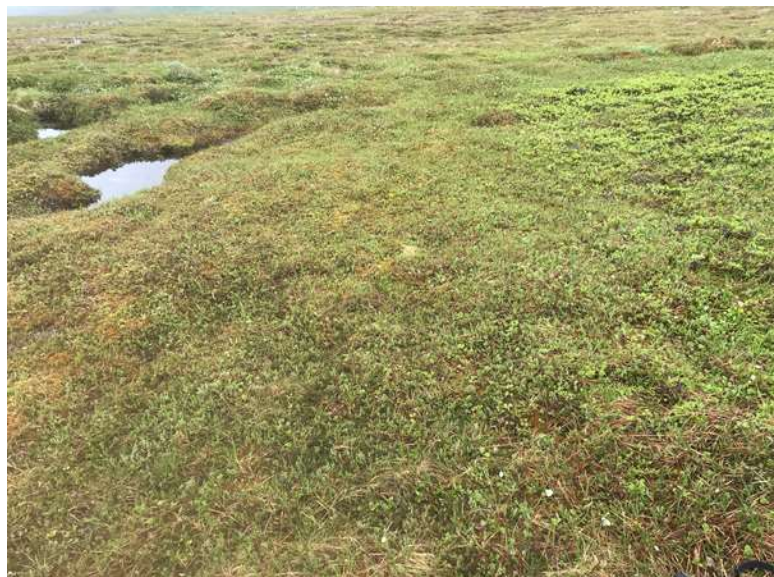


**Photo Name:** Photo\_180621165246



## Additional Reference Data: Photos

HDR3027\_18



**Photo Name:** Photo\_180621165222



**Photo Name:** Photo\_180621165330



**Photo Name:** Photo\_180621165232



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/22/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3028_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>11</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.878292</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1B</u>	

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>OWLS. Wetter than normal antecedent precipitation</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Vaccinium uliginosum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>1</u> x1= <u>1</u>
3. <u>Empetrum nigrum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACW species <u>1</u> x2= <u>2</u>
4. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>144</u> x3= <u>432</u>
5. <u>Salix reticulata</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>Vaccinium vitis-idaea</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>104</u>				Column Totals: <u>146</u> (A) <u>435</u> (B)
50% of total cover: <u>52</u>				<u>Prevalence Index = B/A=</u> <u>2.98</u>
20% of total cover: <u>20.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Arctagrostis latifolia</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Eriophorum angustifolium</u>	<u>1</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>42</u>				
50% of total cover: <u>21</u>				
20% of total cover: <u>8.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>15</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>80</u>				<b>Present?</b>
(Where applicable)				

Remarks: Lichen 1%. Trace: Rho tom, Dry ala, Cal can, Fes alt, Poa arc, Jun cas, Jun big, Luz mul, Luz arc, Tri cer, Ane nar, Art arc, Ang luc, Pyr gra, Lag gla, Ped lab, Rho int, Rub cha, Arn sp., Mic nel, Bis plu, Tep art, Val cap, Cla sar, Lup noo, Ped lan, Llo ser, Gen gla, Pol acu, Mic fol.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A	Organic	hor:Oi
5-7	10YR4/2	100					N/A	Sandy Loam	hor:A
7-8							N/A	Organic	hor:Oe
8-10	5Y4/1	80	2.5YR4/6	20	C	PL	No	Sandy Loam	hor:Bg
10-13							N/A	Organic	hor:Oe
13-20	10YR3/1	50					No	Sandy Loam	hor:B2
13-20	10YR4/2	50					No	Sandy Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☐ Histosol or Histel (A1)

☐ Histic Epipedon (A2)

☐ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☒ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder

☐ Underlying Layer

☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  
Type:   
Depth (inches):   
Field Drainage Class:

**Hydric Soil Present?**    Yes ☐ ☒ No ☐

Remarks:

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  

☒ Surface Water (A1)

☒ High Water Table (A2)

☒ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☐ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**  

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☐ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☐ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☒ FAC-Neutral Test (D5)

**Field Observations:**  
Surface Water Present?    Yes ☒ No ☐    Depth (inches):   
Water Table Present?    Yes ☒ No ☐    Depth (inches):   
Saturation Present?    Yes ☒ No ☐    Depth (inches):   
(includes capillary fringe)

**Wetland Hydrology Present?**    Yes ☐ ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:



**Photo Name:** Photo\_180622094004



**Photo Name:** Photo\_180622093911



**Photo Name:** Photo\_180622093857



## Additional Reference Data: Photos

HDR3028\_18



**Photo Name:** Photo\_180622093951



**Photo Name:** Photo\_180622093919



**Photo Name:** Photo\_180622093927

Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	6/22/2018
Applicant/Owner:	PLP			Sampling Point:	HDR3029_18
Investigators:	MS MD	Landform (hillslope, terrace, etc.):	Hillslope		
Local Relief (concave, convex, none):	None	Slope(%):	11	HGM:	Slope
Subregion (LRR):	X	Lat:	59.879002	Long:	-155.468246
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	PSS1B		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>    X    </u>	No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>			

Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:			
1.					Number of Dominant Species			
2.					That Are OBL, FACW, or FAC: 3 (A)			
3.					Total Number of Dominant			
4.					Species Across All Strata: 3 (B)			
Total Cover: _____					Percent of Dominant Species			
50% of total cover: 0					That Are OBL, FACW, or FAC: 100 (A/B)			
20% of total cover: 0								
Sapling/Shrub Stratum					Prevalence Index worksheet:			
1.	Vaccinium uliginosum	45	Yes	FAC	Total % Cover of:		Multiply by:	
2.	Salix pulchra	35	Yes	FAC	OBL species	x1=		
3.	Betula nana	15	No	FAC	FACW species	x2=		
4.	Empetrum nigrum	10	No	FAC	FAC species	168	x3=	504
5.	Salix reticulata	3	No	FAC	FACU species	1	x4=	4
6.	Rhododendron tomentosum	1	No	FAC	UPL species	x5=		
Total Cover: 110					Column Totals:	169	(A)	508 (B)
50% of total cover: 55					Prevalence Index = B/A= 3.01			
20% of total cover: 22								
Herb Stratum					Hydrophytic Vegetation Indicators:			
1.	Carex bigelowii	55	Yes	FAC	X	Dominance Test is >50%		
2.	Equisetum arvense	3	No	FAC		Prevalence Index is ≤3.0		
3.	Lupinus nootkatensis	1	No	FACU		Morphological Adaptations <sup>1</sup> (Provide		
4.						data in Remarks or on a separate sheet)		
5.						Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)		
6.								
7.								
8.								
9.								
10.								
Total Cover: 59								
50% of total cover: 29.5								
20% of total cover: 11.8								
Plot size (radius, or length x width) 1/10 acre					% Bare Ground 0			
% Cover of Wetland Bryophytes 40					% Cover of Bryophytes 70			
(Where applicable)								
					Hydrophytic Vegetation Present? Yes X No			

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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-8							N/A	Organic	hor:Oi
8-11	10YR3/2	100					N/A	Silt Loam	hor:A
11-17	2.5Y3/2	80	5YR4/4	20	C	PL	N/A	Silt Loam	hor:B1
17-20	2.5Y5/2	40					N/A	Sandy Loam	hor:B2
17-20	10YR4/3	60					N/A	Sandy Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		
Type: None		
Depth (inches):		
Field Drainage Class: SPD - Somewhat Poorly Drained		
	<b>Hydric Soil Present?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Remarks: High percentage of organics in the A and B1 layer. Gravels starting at 15", 10%.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		
Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 2.0		
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 5.0		
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 2.0 (includes capillary fringe)		
	<b>Wetland Hydrology Present?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Heavy recent rainfall.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR3029\_18

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Vaccinium vitis-idaea</u>	<u>1</u>	<u>No</u>	<u>FAC</u>

Additional Reference Data: Photos

HDR3029\_18



Photo Name: Photo\_180622101013



Photo Name: Photo\_180622101030



## Additional Reference Data: Photos

HDR3029\_18



**Photo Name:** Photo\_180622101002



**Photo Name:** Photo\_180622100956



**Photo Name:** Photo\_180622100942



Photo Name: Photo\_180622101039



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 6/22/2018  
 Applicant/Owner: PLP Sampling Point: HDR3030\_18  
 Investigators: MS MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): Convex Slope(%): 11 HGM: N/A  
 Subregion (LRR): X Lat: 59.880222 Long: -155.467682 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Lichen Tundra (DESLT)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			
Remarks: <u>DESLT. Whitish area on aerals. Wetter than normal antecedent precipitation</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index worksheet:</b>
1. <u>Vaccinium uliginosum</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Empetrum nigrum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>Salix pulchra</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>85</u> x3= <u>255</u>
5. <u>Vaccinium vitis-idaea</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FACU species <u>2</u> x4= <u>8</u>
6. <u>Rhododendron tomentosum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>81</u>				Column Totals: <u>87</u> (A) <u>263</u> (B)
50% of total cover: <u>40.5</u>				Prevalence Index = B/A= <u>3.02</u>
20% of total cover: <u>16.2</u>				
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>6</u>				
50% of total cover: <u>3</u>				
20% of total cover: <u>1.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>      </u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>35</u>				<b>Present?</b>
(Where applicable)				

Remarks:  
 Plot contained to veg type. Trace: Sal phl, Sal arc, Sal pol, Dia lap, Hie alp, Cal can, Poa arc, Luz arc, Rub cha, Art arc, Hup hal, Mic nel, Lyc ann, Ang luc, Dry exp, Cam las, Min arc, Ped lab, Lup noo, Rho int, Pol acu. Lichen 15%. Rock 20% (all lichen covered).

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A	Organic	hor:Oi
4-6	10YR3/2	80					N/A	Sandy Loam	hor:A 20% Organics.
6-20	10YR4/4	10					N/A	Sandy Loam	hor:B/C 90% Cobbles.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b>	Yes	No	X
Type: None					
Depth (inches):					
Field Drainage Class: SED - Somewhat Excessively Drained					

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b>	Yes	No	X
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Dry. Water moves rapidly between cobbles.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3030\_18

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Loiseleuria procumbens	1	No	FACU
Spiraea stevenii	1	No	FACU

Additional Reference Data: Photos

HDR3030\_18



Photo Name: Photo\_180622111123



Photo Name: Photo\_180622111135





**Photo Name:** Photo\_180622111143



**Photo Name:** Photo\_180622111130



**Photo Name:** Photo\_180622111215



Photo Name: Photo\_180622111202

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/22/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3033_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>6</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u> Lat: <u>59.881207</u>	Long: <u>-155.464203</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1/EM1C</u>	

Vegetation Type: Subarctic Sedge – Moss Wet Meadow (SSMWM)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>SSMWM. Wetter than normal antecedent precipitation</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix fuscescens</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	<u>Total % Cover of:</u> <u>104</u> <u>Multiply by:</u>
2. <u>Salix pulchra</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	OBL species <u>104</u> x1= <u>104</u>
3. <u>Vaccinium uliginosum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	FACW species <u>15</u> x2= <u>30</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>4</u> x3= <u>12</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>19</u>				Column Totals: <u>123</u> (A) <u>146</u> (B)
50% of total cover: <u>9.5</u>				<u>Prevalence Index = B/A=</u> <u>1.19</u>
20% of total cover: <u>3.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex aquatilis</u>	<u>55</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex pluriflora</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Potentilla palustris</u>	<u>15</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Eriophorum angustifolium</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Eriophorum chamissonis s.l.</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>104</u>				
50% of total cover: <u>52</u>				
20% of total cover: <u>20.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>90</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>95</u>				<b>Present?</b>
(Where applicable)				

Remarks:

Trace: And pol, Emp nig, Rho tom, Rho int, Equ arv, Ane ric, Rum arc, Ped lab. Water 1%.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-14							N/A	Organic	hor:Oi
14-19	5Y4/2	100					Yes	Silt Loam	hor:A High Percentage Of Organic.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:			Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	VPD - Very Poorly Drained				

Remarks: Hydrogen sulfide at 11".

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input checked="" type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	6.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	0.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	0.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:

## Additional Reference Data: Photos

HDR3033\_18



**Photo Name:** Photo\_180622120514



**Photo Name:** Photo\_180622120457



**Photo Name:** Photo\_180622120448



## Additional Reference Data: Photos

HDR3033\_18



Photo Name: Photo\_180622120502



Photo Name: Photo\_180622120536



Photo Name: Photo\_180622120543



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/22/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3034_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>12</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u> Lat: <u>59.880573</u>	Long: <u>-155.462997</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1B</u>	

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>OWLS. Lighter green areas are OWLS, darker areas with brown are ESB. On point 3PP6378. Wetter than normal antecedent precipitation</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>      3      </u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>      3      </u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>      0      </u>				That Are OBL, FACW, or FAC: <u>      100      </u> (A/B)
20% of total cover: <u>      0      </u>				<b>Prevalence Index worksheet:</b>
<b>Sapling/Shrub Stratum</b>				<b>Total % Cover of:</b>
1. <u>Salix pulchra</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<b>Multiply by:</b>
2. <u>Empetrum nigrum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Betula nana</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>Vaccinium uliginosum</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FAC species <u>      125      </u> x3= <u>      375      </u>
5. <u>Salix reticulata</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      1      </u> x4= <u>      4      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>105</u>				Column Totals: <u>      126      </u> (A) <u>      379      </u> (B)
50% of total cover: <u>      52.5      </u>				<b>Prevalence Index = B/A=</b> <u>      3.01      </u>
20% of total cover: <u>      21      </u>				<b>Hydrophytic Vegetation Indicators:</b>
<b>Herb Stratum</b>				<u>X</u> Dominance Test is >50%
1. <u>Carex bigelowii</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index is ≤3.0
2. <u>Calamagrostis canadensis</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
3. <u>Festuca altaica</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
4. <u>Anemone narcissiflora</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      21      </u>				
50% of total cover: <u>      10.5      </u>				
20% of total cover: <u>      4.2      </u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>1</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>40</u>				<b>Present?</b>
(Where applicable)				

Remarks:

Trace: water, lichen, Pic gla, Dry ala, Vac vit, Hie alp, Arc lat, Rub cha, Ang luc, Tha alp, Rho int, Ped lab, Ste lon, Pac cyn, Lag gla, Ane par, Art arc, Car pra, Aco del, Ane ric, Val cap, Ped lan, Arn sp., Mic nel, Hup hal.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-8							N/A	Organic	hor:Oi
8-10	10YR3/3	100					No	Silt Loam	hor:A
10-15	2.5Y3/1	90	5YR4/6	10	C	PL	No	Silt Loam	hor:B1
15-20	10YR3/4	100					No	Sandy Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type:   None		
Depth (inches):		
Field Drainage Class:   PD - Poorly Drained		

Remarks: Gravels/cobbles 20% @ 15".

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> FAC-Neutral Test (D5)		
<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Surface Water Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):    1.0			
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):    1.0			
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):    0.0			
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:

## Additional Reference Data: Photos

HDR3034\_18



**Photo Name:** Photo\_180622132116



**Photo Name:** Photo\_180622132131



**Photo Name:** Photo\_180622132108



## Additional Reference Data: Photos

HDR3034\_18



**Photo Name:** Photo\_180622132121



**Photo Name:** Photo\_180622132103



**Photo Name:** Photo\_180622132201

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 6/22/2018  
 Applicant/Owner: PLP Sampling Point: HDR3035\_18  
 Investigators: MS MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): Convex Slope(%): 8 HGM: N/A  
 Subregion (LRR): X Lat: 59.882813 Long: -155.470032 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Lichen Tundra (DESLT)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: DESLT. Pairs with 3027. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Betula nana</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Empetrum nigrum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>Salix pulchra</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>86</u> x3= <u>258</u>
5. <u>Vaccinium vitis-idaea</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACU species <u>1</u> x4= <u>4</u>
6. <u>Dryas octopetala</u>	<u>2</u>	<u>No</u>	<u>NL</u>	UPL species <u>3</u> x5= <u>15</u>
Total Cover: <u>72</u>				Column Totals: <u>90</u> (A) <u>277</u> (B)
50% of total cover: <u>36</u>				Prevalence Index = B/A= <u>3.08</u>
20% of total cover: <u>14.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Festuca altaica</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Hierochloe alpina</u>	<u>1</u>	<u>No</u>	<u>NL</u>	data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>18</u>				
50% of total cover: <u>9</u>				
20% of total cover: <u>3.6</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>5</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>20</u>				<b>Present?</b>
(Where applicable)				

Remarks: Lichen 15%. Bare rock 5% (all covered with lichen). Trace: Sal pol, Spi ste, Sal arc, Dia lap, Jun big, Luz arc, Arc lat, Car nes, Ane nar, Ane ric, Dry exp, Hup hal, Ant mon, Tep fri, Val cap, Lup noo, Art arc, Mic nel, Min arc, Arn sp., Ang luc, Pri cun, Rho int, Ped cap, Ped lab, Equ arv, Ran niv, Ped lan, Bis viv.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A	Organic	hor:Oi
3-5	10YR3/4	100					N/A	Sandy Loam	hor:A
5-14	10YR4/4	100					No	Sandy Loam	hor:B1
14-23	10YR4/3	100					No	Sandy Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches):	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Soil is moist but not saturated. Recent heavy rainfall.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR3035\_18

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Rhododendron tomentosum	1	No	FAC
Salix reticulata	1	No	FAC
Loiseleuria procumbens	1	No	FACU

Additional Reference Data: Photos

HDR3035\_18



Photo Name: Photo\_180622143415



Photo Name: Photo\_180622143441



## Additional Reference Data: Photos

HDR3035\_18



Photo Name: Photo\_180622143430



Photo Name: Photo\_180622143455



Photo Name: Photo\_180622143410



Photo Name: Photo\_180622143403



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 6/22/2018  
 Applicant/Owner: PLP Sampling Point: HDR3036\_18  
 Investigators: MS MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): Concave Slope(%): 5 HGM: Slope  
 Subregion (LRR): X Lat: 59.886574 Long: -155.466888 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Dwarf Ericaceous Shrub Tundra (DEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: FT 009. DEST. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Salix reticulata</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>10</u> x1= <u>10</u>
2. <u>Salix pulchra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
3. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	FAC species <u>126</u> x3= <u>378</u>
4. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
5. <u>Empetrum nigrum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>Rhododendron tomentosum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Column Totals: <u>136</u> (A) <u>388</u> (B)
Total Cover: <u>76</u>				<u>Prevalence Index = B/A=</u> <u>2.85</u>
50% of total cover: <u>38</u>				
20% of total cover: <u>15.2</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Eriophorum angustifolium</u>	<u>10</u>	<u>No</u>	<u>OBL</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>60</u>				
50% of total cover: <u>30</u>				
20% of total cover: <u>12</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>25</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>80</u>				<b>Present?</b>
(Where applicable)				

Remarks: Trace: rock, And pol, Vac vit, Loi pro, Luz pip, Jun big, Rub cha, Lag gla, Equ arv, Pet fri, Cla sar, Bis plu, Rho int, Mic nel, Mic hie, Ped lab, Teph frig, Lyc ann, Ran tur, Ane ric, Ane par, Ane nar. Water 5%.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-10							N/A	Organic	hor:Oi
10-16							N/A	Organic	hor:Oa
16-20							N/A		hor:C *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b> Type: <input type="text"/> None Depth (inches): <input type="text"/> Field Drainage Class: <input type="text"/> PD - Poorly Drained	<b>Hydric Soil Present?</b> Yes <input type="text"/> <input checked="" type="text"/> No <input type="text"/>
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Remarks:    \*3: Cobbles Or Boulders At 16+. No H2S.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b> Surface Water Present?    Yes <input checked="" type="text"/> No <input type="text"/> Depth (inches): <input type="text"/> 18.0 Water Table Present?    Yes <input checked="" type="text"/> No <input type="text"/> Depth (inches): <input type="text"/> 1.0 Saturation Present?    Yes <input checked="" type="text"/> No <input type="text"/> Depth (inches): <input type="text"/> 0.0 (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="text"/> <input checked="" type="text"/> No <input type="text"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Frost boils filled with water with cobble substrate.

Geomorphic Position: Depression on bench.

## Additional Reference Data: Photos

HDR3036\_18



Photo Name: Photo\_180622153357



Photo Name: Photo\_180622153348



Photo Name: Photo\_180622153323



## Additional Reference Data: Photos

HDR3036\_18



**Photo Name:** Photo\_180622153337



**Photo Name:** Photo\_180622153329



**Photo Name:** Photo\_180622153314

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 6/23/2018  
 Applicant/Owner: PLP Sampling Point: HDR3038\_18  
 Investigators: MS MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): Convex Slope(%): 4 HGM: N/A  
 Subregion (LRR): X Lat: 59.886528 Long: -155.466507 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra (DEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks: <u>DEST. Wetter than normal antecedent precipitation</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>      </u>			
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b> <u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u> OBL species <u>      </u> x1= <u>      </u> FACW species <u>      </u> x2= <u>      </u> FAC species <u>106</u> x3= <u>318</u> FACU species <u>      </u> x4= <u>      </u> UPL species <u>11</u> x5= <u>55</u> Column Totals: <u>117</u> (A) <u>373</u> (B)  <i>Prevalence Index = B/A=</i> <u>3.19</u>
1. <u>Betula nana</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Empetrum nigrum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Rhododendron tomentosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
4. <u>Vaccinium uliginosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
5. <u>Vaccinium vitis-idaea</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
6. <u>Dryas octopetala</u>	<u>10</u>	<u>No</u>	<u>NL</u>	
Total Cover:	<u>102</u>			
50% of total cover:	<u>51</u>	20% of total cover:	<u>20.4</u>	
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
1. <u>Carex bigelowii</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Carex microchaeta</u>	<u>3</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Festuca altaica</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
4. <u>Hierochloe alpina</u>	<u>1</u>	<u>No</u>	<u>NL</u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>15</u>			
50% of total cover:	<u>7.5</u>	20% of total cover:	<u>3</u>	
Plot size (radius, or length x width)	<u>1/10 acre</u>	% Bare Ground	<u>1</u>	
% Cover of Wetland Bryophytes	<u>0</u>	% Cover of Bryophytes	<u>25</u>	
(Where applicable)				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>

Remarks:  
 Lichen 5%. Trace: Dia lap, Loi pro, Sal pol, Sal plu, Sal phe, Arc alp, Arc lat, Luz tun, Poa arc, Fes bra, Bis plu, Ane nar, Ped lab, Ped cap, Ant mon.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A	Organic	hor:Oi
5-7	10YR2/1	100					N/A	Silt Loam	hor:A
7-13	7.5YR3/2	100					N/A	Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes    No    X
Type:   None		
Depth (inches):		
Field Drainage Class:   WD - Well Drained		

Remarks: 13"+ cobbles (refusal).

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes    No    X
Surface Water Present?    Yes    No    X    Depth (inches):		
Water Table Present?    Yes    No    X    Depth (inches):		
Saturation Present?    Yes    No    X    Depth (inches):		
(includes capillary fringe)		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Dry.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR3038\_18

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Salix arctica	2	No	FAC

Additional Reference Data: Photos

HDR3038\_18



Photo Name: Photo\_180622162058



Photo Name: Photo\_180622162310





Photo Name: Photo\_180622162033



Photo Name: Photo\_180622162253



Photo Name: Photo\_180622162041

## Additional Reference Data: Photos

HDR3038\_18



**Photo Name:** Photo\_180622162050



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/23/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3039_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): <u>20</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.893436</u>	Long: <u>-155.451935</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Dwarf Birch Shrub (ODBS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: <u>ODBS. Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Betula nana</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Empetrum nigrum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Rhododendron tomentosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACW species <u>1</u> x2= <u>2</u>
4. <u>Salix pulchra</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>133</u> x3= <u>399</u>
5. <u>Vaccinium uliginosum</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	FACU species <u>1</u> x4= <u>4</u>
6. <u>Vaccinium vitis-idaea</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	UPL species <u>1</u> x5= <u>5</u>
Total Cover: <u>115</u>				Column Totals: <u>136</u> (A) <u>410</u> (B)
50% of total cover: <u>57.5</u>				Prevalence Index = B/A= <u>3.01</u>
20% of total cover: <u>23</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex bigelowii</u>	<u>7</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Carex microchaeta</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus chamaemorus</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	data in Remarks or on a separate sheet)
5. <u>Hierochloe alpina</u>	<u>1</u>	<u>No</u>	<u>NL</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>21</u>				
50% of total cover: <u>10.5</u>				
20% of total cover: <u>4.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>25</u>				<b>Present?</b>
(Where applicable)				

Remarks: Lichen 2%. Trace: exposed soil, Arc alp, Aln sin, Lin bor, Luz tun, Poa arc, Car pod, Ste lon, Art arc, Pet fri, Dry exp, San can, Ang luc, Gym dry, Equ arv, Ped lab, Val cap, Aco del, Ped cap, Ane nar, Tri eur, Cha ang, Rho int, Ane ric, Tri spi.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-6							N/A	Organic	hor:Oi
6-7	10YR5/1	100					N/A	Sandy Loam	hor:C Ash
7-11	7.5YR3/3	75					N/A	Sandy Loam	hor:B1 25% Organic Inclusions.
11-18	10YR3/2	100					N/A	Sandy Loam	hor:B2
18-20	10YR3/2	100					N/A	Sandy Loam	hor:B Frozen

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	Seasonal Frost		Yes	No	X
Depth (inches):	18				
Field Drainage Class:	WD - Well Drained				

Remarks: No water perched above seasonal frost. Dry to 18 inches. Cobbles starting at 5 inches, 30 percent.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input checked="" type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	No	X	Depth (inches):	
Water Table Present?	Yes	No	X	Depth (inches):	
Saturation Present?	Yes	No	X	Depth (inches):	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Convex hillslope. Seasonal frost, but water must drain rapidly - no water perched above. Heavy recent rainfall.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3039\_18

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Salix arctica	2	No	FAC
Spiraea stevenii	1	No	FACU

Additional Reference Data: Photos

HDR3039\_18



Photo Name: Photo\_180623090931



Photo Name: Photo\_180623090835



## Additional Reference Data: Photos

HDR3039\_18



**Photo Name:** Photo\_180623090920



**Photo Name:** Photo\_180623090820



**Photo Name:** Photo\_180623090825



Photo Name: Photo\_180623090809

Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	6/23/2018
Applicant/Owner:	PLP			Sampling Point:	HDR3040_18
Investigators:	MS MD	Landform (hillslope, terrace, etc.):	Hillslope		
Local Relief (concave, convex, none):	Concave	Slope(%):	10	HGM:	Slope
Subregion (LRR):	X	Lat:	59.893230	Long:	-155.451553
				Datum:	WGS84
Soil Map Unit Name:	N/A		NWI Classification:	PSS1/EM1C	

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No   X   (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes   X   No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>  X  </u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			

Tree Stratum				Dominance Test Worksheet:			
		Absolute % Cover	Dominant Species?	Indicator Status			
1.					Number of Dominant Species		
2.					That Are OBL, FACW, or FAC: 5 (A)		
3.					Total Number of Dominant		
4.					Species Across All Strata: 5 (B)		
Total Cover: _____					Percent of Dominant Species		
50% of total cover: 0			20% of total cover: 0		That Are OBL, FACW, or FAC: 100 (A/B)		
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1.	Salix fuscescens	25	Yes	FACW	Total % Cover of:		Multiply by:
2.	Salix pulchra	20	Yes	FAC	OBL species	95	x1= 95
3.	Empetrum nigrum	10	No	FAC	FACW species	31	x2= 62
4.	Alnus sinuata	5	No	FAC	FAC species	70	x3= 210
5.	Vaccinium uliginosum	5	No	FAC	FACU species	1	x4= 4
6.	Spiraea stevenii	1	No	FACU	UPL species		x5=
Total Cover: 66					Column Totals:	197 (A)	371 (B)
50% of total cover: 33			20% of total cover: 13.2		Prevalence Index = B/A= 1.88		
Herb Stratum				Hydrophytic Vegetation Indicators:			
1.	Carex pluriflora	60	Yes	OBL	X	Dominance Test is >50%	
2.	Equisetum arvense	30	Yes	FAC	X	Prevalence Index is ≤3.0	
3.	Potentilla palustris	30	Yes	OBL		Morphological Adaptations <sup>1</sup> (Provide	
4.	Sanguisorba canadensis	5	No	FACW		data in Remarks or on a separate sheet)	
5.	Eriophorum angustifolium	5	No	OBL		Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
6.	Rubus chamaemorus	1	No	FACW			
7.							
8.							
9.							
10.							
Total Cover: 131					*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.		
50% of total cover: 65.5			20% of total cover: 26.2				
Plot size (radius, or length x width) 1/10 acre				% Bare Ground 0			
% Cover of Wetland Bryophytes 85		% Cover of Bryophytes 90					
(Where applicable)							
Hydrophytic Vegetation Present?							
				Yes X No			

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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-16							N/A	Organic	hor:Oi
16-18	2.5Y3/2	100					N/A	Sandy Loam	hor:B *2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type:    None		
Depth (inches):		
Field Drainage Class:    VPD - Very Poorly Drained		

Remarks:    \*2: Coarse Sand. 18+ Cobbles/boulders

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		
<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Surface Water Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):    1.0			
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):    4.0			
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):    0.0			
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Multiple seeps through wetland.

Geomorphic Position: Small bench (toeslope).

## Additional Reference Data: Photos

HDR3040\_18



Photo Name: Photo\_180623094556



Photo Name: Photo\_180623094533



Photo Name: Photo\_180623094516



## Additional Reference Data: Photos

HDR3040\_18



Photo Name: Photo\_180623094623



Photo Name: Photo\_180623094545



Photo Name: Photo\_180623094635



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/23/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3042_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>15</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.896378</u>	Long: <u>-155.442444</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Closed Willow Tall Shrub (CWTS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: <u>CWTS. Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>			20% of total cover: <u>0</u>	That Are OBL, FACW, or FAC: <u>60</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Salix barclayi</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Alnus sinuata</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>5</u> x2= <u>10</u>
4. <u>Spiraea stevenii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	FAC species <u>135</u> x3= <u>405</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>32</u> x4= <u>128</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>97</u>				Column Totals: <u>172</u> (A) <u>543</u> (B)
50% of total cover: <u>48.5</u>			20% of total cover: <u>19.4</u>	<u>Prevalence Index = B/A=</u> <u>3.16</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Gymnocarpium dryopteris</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Equisetum sylvaticum</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Dryopteris expansa</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
5. <u>Anemone richardsonii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Micranthes nelsoniana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Viola epipsila</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
8. <u>Heracleum maximum</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
9. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
10. <u>Equisetum arvense</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>75</u>				<b>Hydrophytic</b>
50% of total cover: <u>37.5</u>			20% of total cover: <u>15</u>	<b>Vegetation</b>
Plot size (radius, or length x width) <u>1/10 acre</u>			% Bare Ground <u>0</u>	Yes <u>X</u> No <u>      </u>
% Cover of Wetland Bryophytes <u>0</u>	% Cover of Bryophytes <u>5</u>			<b>Present?</b>
(Where applicable)				
Remarks:				
Trace: lichen, bare ground, Rib gla, Ang luc, Ang gen, Ger eri, Str amp, Ath fel, Cha ang, Sen tri, Aco del, Car umb, Tri eur, Cor pau, Ado mus, Lyc ann.				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A	Organic	hor:Oi
4-6	7.5YR3/2	100					N/A	Silt Loam	hor:A
6-14	10YR3/4	100					No	Silt Loam	hor:B1
14-16	10YR4/3	100					No	Sandy Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches):	
Field Drainage Class: WD - Well Drained	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: 16"+ cobbles/boulders

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input checked="" type="checkbox"/> X No <input type="checkbox"/> Depth (inches): 16.0	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
(includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Saturated just above cobbles.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3042\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Valeriana capitata	2	No	FAC
Veratrum viride	1	No	FAC

Additional Reference Data: Photos

HDR3042\_18



Photo Name: Photo\_180623113745



Photo Name: Photo\_180623113814



## Additional Reference Data: Photos

HDR3042\_18



**Photo Name:** Photo\_180623113840



**Photo Name:** Photo\_180623113754



**Photo Name:** Photo\_180623113802



Photo Name: Photo\_180623113823

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 6/23/2018  
 Applicant/Owner: PLP Sampling Point: HDR3045\_18  
 Investigators: MS MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 14 HGM: Slope  
 Subregion (LRR): X Lat: 59.895363 Long: -155.446808 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Closed Alder – Willow Tall Shrub (CAWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: CAWTS. On point 3PP6420. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
Total Cover: <u>      </u>				<b>Prevalence Index worksheet:</b>
50% of total cover: <u>0</u>				Total % Cover of: <u>      </u> Multiply by:
20% of total cover: <u>0</u>				OBL species <u>      </u> x1= <u>      </u>
Total Cover: <u>90</u>				FACW species <u>8</u> x2= <u>16</u>
50% of total cover: <u>45</u>				FAC species <u>145</u> x3= <u>435</u>
20% of total cover: <u>18</u>				FACU species <u>24</u> x4= <u>96</u>
Total Cover: <u>87</u>				UPL species <u>      </u> x5= <u>      </u>
50% of total cover: <u>43.5</u>				Column Totals: <u>177</u> (A) <u>547</u> (B)
20% of total cover: <u>17.4</u>				Prevalence Index = B/A= <u>3.09</u>
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic Vegetation Indicators:</b>
% Bare Ground <u>0</u>				<u>X</u> Dominance Test is >50%
% Cover of Wetland Bryophytes <u>0</u> (Where applicable)				Prevalence Index is ≤3.0
% Cover of Bryophytes <u>10</u>				Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)
Remarks:				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
Trace: lichen, Spi ste, Rub cha, Lyc ann, Ang luc, Cham ang, Ver vir, Pol acu, Sen tri, Ang gen, Rum arc, Aco del, Cha tet, Str amp, Ste sit, Ado mos, Ger eri. Water 1%.				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-8							N/A	Organic	hor:Oi
8-10	7.5YR2.5/1	100					N/A	Silt Loam	hor:A
10-14	2.5Y4/2	100					Yes	Sandy Loam	hor:B1
14-18	10Y4/1	95	10YR5/3	5	C	PL	Yes	Sandy Loam	hor:B2 18+ Cobbles/boulders

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☐ Histosol or Histel (A1)

☒ Histic Epipedon (A2)

☒ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☐ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder

☐ Underlying Layer

☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  
Type:   
Depth (inches):   
Field Drainage Class:

**Hydric Soil Present?**    Yes   No

Remarks: H2S at 11".

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  

☒ Surface Water (A1)

☒ High Water Table (A2)

☒ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☒ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**  

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☒ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☐ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☐ FAC-Neutral Test (D5)

**Field Observations:**  
Surface Water Present?    Yes   No     Depth (inches):   
Water Table Present?    Yes   No     Depth (inches):   
Saturation Present?    Yes   No     Depth (inches):   
(includes capillary fringe)

**Wetland Hydrology Present?**    Yes   No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Many seeps throughout polygon.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3045\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Gymnocarpium dryopteris	1	No	FACU
Trientalis europaea	1	No	FACU
Cardamine umbellata	1	No	FACW

Additional Reference Data: Photos

HDR3045\_18



Photo Name: Photo\_180623134047



Photo Name: Photo\_180623134015



## Additional Reference Data: Photos

HDR3045\_18



Photo Name: Photo\_180623134022



Photo Name: Photo\_180623134040



Photo Name: Photo\_180623134027





**Photo Name:** Photo\_180623134009

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/23/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3048_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): <u>20</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.895149</u>	Long: <u>-155.446487</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Closed Alder Tall Shrub (CATS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>      </u> No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: CATS. Small patch of alders. Wetter than normal antecedent precipitation	

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				<b>Prevalence Index worksheet:</b> Total % Cover of: <u>      </u> Multiply by: OBL species <u>      </u> x1= <u>      </u> FACW species <u>      </u> x2= <u>      </u> FAC species <u>102</u> x3= <u>306</u> FACU species <u>46</u> x4= <u>184</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>148</u> (A) <u>490</u> (B)  Prevalence Index = B/A= <u>3.31</u>
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<b>Sapling/Shrub Stratum</b>				
1. <u>Alnus sinuata</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Salix pulchra</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>75</u>				<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover: <u>37.5</u>		20% of total cover: <u>15</u>		
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Heracleum maximum</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Dryopteris expansa</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	
4. <u>Athyrium cyclosorum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
5. <u>Gymnocarpium dryopteris</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
6. <u>Thelypteris phegopteris</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
7. <u>Anemone richardsonii</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
8. <u>Veratrum viride</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
9. <u>Epilobium angustifolium</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>73</u>				
50% of total cover: <u>36.5</u>		20% of total cover: <u>14.6</u>		
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>O</u>				
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>10</u>		
(Where applicable)				
<b>Hydrophytic Vegetation Present?</b> Yes <u>      </u> No <u>      </u> X <u>      </u>				
Remarks:				

Trace: lichen, Rib gla, Sal ala, Epi horn, Ger eri, Sen tri, Ang luc, Str amp, Mer pan, Car umb, Equ arv, Mic nel, Val cap, Vio epi, Tri eur, Chr tet, Ado mos.

## SOIL

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

[illegible]

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

### Hydric Soil Indicators:

### Indicators for Problematic Hydric Soils<sup>3</sup>:

<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4)*	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

## Restrictive Layer (if present):

Type: None

Depth (inches): \_\_\_\_\_

Field Drainage Class: WD - Well Drained

**Hydric Soil Present?**      Yes      No      **X**

Remarks:

## HYDROLOGY

### Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

*Secondary Indicators (2 or more required)*

Surface Water (A1)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)
High Water Table (A2)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)
Saturation (A3)	Marl Deposits (B15)	Presence of Reduced Iron (C4)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)
Sediment Deposits (B2)	Dry Season Water Table (C2)	Stunted or Stressed Plants (D1)
Drift Deposits (B3)	Other (Explain in Remarks)	Geomorphic Position (D2)
Algal Mat or Crust (B4)		Shallow Aquitard (D3)
Iron Deposits (B5)		Microtopographic Relief (D4)
Surface Soil Cracks (B6)		FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present?	Yes	<u>      </u>	No	<u>      </u>	X	Depth (inches):	<u>                    </u>
Water Table Present?	Yes	<u>      </u>	No	<u>      </u>	X	Depth (inches):	<u>                    </u>
Saturation Present?	Yes	<u>      </u>	No	<u>      </u>	X	Depth (inches):	<u>                    </u>
(includes capillary fringe)							

Wetland Hydrology Present?	Yes	No	X
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Multiple streams in area. 3046 and 3047.

Geomorphic Position: Hillside.





Photo Name: Photo\_180623143627



Photo Name: Photo\_180623143634



Photo Name: Photo\_180623143654



## Additional Reference Data: Photos

HDR3048\_18



Photo Name: Photo\_180623143704



Photo Name: Photo\_180623143620



Photo Name: Photo\_180623143641

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/23/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3050_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>12</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.893822</u>	Long: <u>-155.442841</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
		NWI Classification: <u>PSS1B</u>

Vegetation Type: Open Alder – Willow Tall Shrub (OAWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		

Remarks: OAWTS Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>75</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Alnus sinuata</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Spiraea stevenii</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	FACW species <u>5</u> x2= <u>10</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>147</u> x3= <u>441</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>46</u> x4= <u>184</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>60</u>				Column Totals: <u>198</u> (A) <u>635</u> (B)
50% of total cover: <u>30</u>				Prevalence Index = B/A= <u>3.21</u>
20% of total cover: <u>12</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Dryopteris expansa</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Trientalis europaea</u>	<u>7</u>	<u>No</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
5. <u>Equisetum sylvaticum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Veratrum viride</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
7. <u>Gymnocarpium dryopteris</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Heracleum maximum</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	must be present, unless disturbed or problematic.
9. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
10. <u>Viola epipsila</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>138</u>				
50% of total cover: <u>69</u>				
20% of total cover: <u>27.6</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>10</u>				
% Cover of Bryophytes <u>25</u>				
(Where applicable)				
Remarks:				
Trace: Rib gla, Luz par, Pyr asa, Aco del, Ang gen, Pyr min, Com pal, Pol acu, Rum arc, Ang luc, Epi lut, Sen tri, Epi hor, Car umb, Mic nel, Ane ric, Ath fel.				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-7							N/A	Organic	hor:Oi
7-15	5Y3/1	85	10R4/6	15	C	PL	Yes	Sandy Loam	hor:Bg *2
15-19							N/A	Sand	hor:C *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input checked="" type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type:   None		
Depth (inches):		
Field Drainage Class:   PD - Poorly Drained		

Remarks: Dug multiple holes, some had histic epipedon. H2S at 12".   \*2: H2S at 12". Nice picture of RMF on root channel. \*3: Coarse Sand. Color is variegated.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    2.0		
Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    16.0		
Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    12.0		
(includes capillary fringe)		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
H2S at 12". Multiple seeps in area.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3050\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Epilobium angustifolium	2	No	FACU
Geranium erianthum	1	No	FACU
Streptopus amplexifolius	1	No	FACU

Additional Reference Data: Photos

HDR3050\_18



Photo Name: Photo\_180623155604



Photo Name: Photo\_180623155634



## Additional Reference Data: Photos

HDR3050\_18



Photo Name: Photo\_180623155658



Photo Name: Photo\_180623155555



Photo Name: Photo\_180623155714





**Photo Name:** Photo\_180623155618

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/24/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3052_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>16</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.893261</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NW1 Classification: <u>PSS1B</u>	

Vegetation Type: Open Willow Tall Shrub (OWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>OWTS. Wetter than normal antecedent precipitation</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>75</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Salix barclayi</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Spiraea stevenii</u>	<u>8</u>	<u>No</u>	<u>FACU</u>	FACW species <u>10</u> x2= <u>20</u>
4. <u>Alnus sinuata</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>100</u> x3= <u>300</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>27</u> x4= <u>108</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>78</u>				Column Totals: <u>137</u> (A) <u>428</u> (B)
50% of total cover: <u>39</u>				<u>Prevalence Index = B/A=</u> <u>3.12</u>
20% of total cover: <u>15.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Gymnocarpium dryopteris</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index is ≤3.0
3. <u>Sanguisorba canadensis</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Equisetum arvense</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Equisetum sylvaticum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Viola epipsila</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
7. <u>Epilobium angustifolium</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Geranium erianthum</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	must be present, unless disturbed or problematic.
9. <u>Streptopus amplexifolius</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
10. <u>Trientalis europaea</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>59</u>				
50% of total cover: <u>29.5</u>				
20% of total cover: <u>11.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <sup>8</sup> <u>      </u>				
(Where applicable)				
Remarks:				
Trace: Ang luc, Ver vir, Ath fel, Pol acu, Car umb, Rub cha, Rub ste, Mic nel, Ane rich.				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A	Organic	hor:Oi
5-7	7.5YR3/2	100					N/A	Silt Loam	hor:A
7-10	2.5Y4/2	90	5YR4/6	10	C	PL	Yes	Silt Loam	hor:Bg
10-14							N/A	Organic	hor:Oe
14-20	5Y4/1	80	2.5YR4/8	20	C	PL	Yes	Silt Loam	hor:Bg

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input checked="" type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b>	Yes	<input checked="" type="checkbox"/> No
Type: None				
Depth (inches):				
Field Drainage Class: PD - Poorly Drained				

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b>	
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	Yes	<input checked="" type="checkbox"/> No
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 15.0		
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 10.0		
(includes capillary fringe)			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:



## Additional Reference Data: Photos

HDR3052\_18



**Photo Name:** Photo\_180623163854



**Photo Name:** Photo\_180623163837



**Photo Name:** Photo\_180623163902



## Additional Reference Data: Photos

HDR3052\_18



Photo Name: Photo\_180623163931



Photo Name: Photo\_180623163940



Photo Name: Photo\_180623163843

Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	6/24/2018
Applicant/Owner:	PLP			Sampling Point:	HDR3053_18
Investigators:	MS MD	Landform (hillslope, terrace, etc.):	Floodplain		
Local Relief (concave, convex, none):	Concave	Slope(%):	4	HGM:	N/A
Subregion (LRR):	X	Lat:	59.890339	Long:	-155.432312
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:			
1.					Number of Dominant Species			
2.					That Are OBL, FACW, or FAC: 3 (A)			
3.					Total Number of Dominant			
4.					Species Across All Strata: 4 (B)			
Total Cover: _____					Percent of Dominant Species			
50% of total cover: 0					That Are OBL, FACW, or FAC: 75 (A/B)			
20% of total cover: 0								
Sapling/Shrub Stratum					Prevalence Index worksheet:			
1.	Salix pulchra	45	Yes	FAC	Total % Cover of:		Multiply by:	
2.	Empetrum nigrum	40	Yes	FAC	OBL species	x1=		
3.	Spiraea stevenii	5	No	FACU	FACW species	13 x2=	26	
4.	Betula nana	3	No	FAC	FAC species	141 x3=	423	
5.	Vaccinium vitis-idaea	3	No	FAC	FACU species	26 x4=	104	
6.	Vaccinium uliginosum	2	No	FAC	UPL species	x5=		
Total Cover: 98					Column Totals:	180 (A)	553 (B)	
50% of total cover: 49					Prevalence Index = B/A= 3.07			
20% of total cover: 19.6								
Herb Stratum					Hydrophytic Vegetation Indicators:			
1.	Calamagrostis canadensis	30	Yes	FAC	X	Dominance Test is >50%		
2.	Gymnocarpium dryopteris	15	Yes	FACU		Prevalence Index is ≤3.0		
3.	Sanguisorba canadensis	10	No	FACW		Morphological Adaptations <sup>1</sup> (Provide		
4.	Equisetum arvense	8	No	FAC		data in Remarks or on a separate sheet)		
5.	Cornus suecica	3	No	FAC		Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)		
6.	Epilobium angustifolium	3	No	FACU				
7.	Anemone richardsonii	2	No	FAC				
8.	Rhodiola integrifolia	2	No	FAC				
9.	Geranium erianthum	2	No	FACU				
10.	Epilobium hornemannii	2	No	FACW				
Total Cover: 82					<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
50% of total cover: 41								
20% of total cover: 16.4								
Plot size (radius, or length x width) 1/10 acre					% Bare Ground 0			
% Cover of Wetland Bryophytes 0					% Cover of Bryophytes 55			
(Where applicable)								
					Hydrophytic Vegetation Present? Yes X No			

1304 of 1906



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-11							N/A	Organic	hor:Oi
11-22	7.5YR2.5/1	100					No	Silt Loam	hor:A *2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches):	
Field Drainage Class: SPD - Somewhat Poorly Drained	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: Hummocks. Dug multiple holes on top of and in between hummocks. All had 8" organics. Lower holes hit gravel at 16". Assumed to not be saturated due to recent heavy rainfall and presence of water in almost all plots this trip. \*2: Very High Percentage Of Organics. Potentially An Oe Layer.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
(includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No water in pit. Pit is on top of hummock.

Geomorphic Position: Directly adjacent to stream. Small stream valley. Concave across surface. Stream is 1' wide, 3" deep. Stable flow, stable channel. 1' high banks.

Additional Reference Data: Overflow Vegetation

HDR3053\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Luzula parviflora	1	No	FAC
Rubus stellatus	1	No	FAC
Viola epipsila	1	No	FAC
Achillea millefolium s.l.	1	No	FACU
Rumex arcticus	1	No	FACW

Additional Reference Data: Photos

HDR3053\_18



Photo Name: Photo\_180624085344



Photo Name: Photo\_180624085220



## Additional Reference Data: Photos

HDR3053\_18



**Photo Name:** Photo\_180624085301



**Photo Name:** Photo\_180624085237



**Photo Name:** Photo\_180624085248





Photo Name: Photo\_180624085357

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 6/24/2018  
 Applicant/Owner: PLP Sampling Point: HDR3054\_18  
 Investigators: MS MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): Concave Slope(%): 4 HGM: N/A  
 Subregion (LRR): X Lat: 59.890770 Long: -155.432358 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Willow Low Shrub (CWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	

Remarks: CWLS Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>80</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index worksheet:</b>				
Total % Cover of:		Multiply by:		
OBL species	<u>      </u>	x1=	<u>      </u>	
FACW species	<u>8</u>	x2=	<u>16</u>	
FAC species	<u>154</u>	x3=	<u>462</u>	
FACU species	<u>28</u>	x4=	<u>112</u>	
UPL species	<u>      </u>	x5=	<u>      </u>	
Column Totals:	<u>190</u> (A)		<u>590</u> (B)	
Prevalence Index = B/A=				<u>3.11</u>
<b>Hydrophytic Vegetation Indicators:</b>				
X Dominance Test is >50%				
Prevalence Index is ≤3.0				
Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)				
Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix pulchra	85	Yes	FAC
2. Empetrum nigrum	20	No	FAC
3. Vaccinium uliginosum	20	No	FAC
4. Spiraea stevenii	10	No	FACU
5. Betula nana	2	No	FAC
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>
Total Cover: <u>137</u>			
50% of total cover: <u>68.5</u>			
20% of total cover: <u>27.4</u>			
<b>Herb Stratum</b>			
1. Gymnocarpium dryopteris	10	Yes	FACU
2. Calamagrostis canadensis	7	Yes	FAC
3. Valeriana capitata	7	Yes	FAC
4. Sanguisorba canadensis	7	Yes	FACW
5. Anemone richardsonii	5	No	FAC
6. Cornus suecica	5	No	FAC
7. Epilobium angustifolium	5	No	FACU
8. Equisetum arvense	2	No	FAC
9. Geranium erianthum	2	No	FACU
10. Viola epipsila	1	No	FAC
Total Cover: <u>53</u>			
50% of total cover: <u>26.5</u>			
20% of total cover: <u>10.6</u>			
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>			
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>80</u>			
(Where applicable)			

Remarks:  
 Trace: Car big, Luz par, Poa arc, Her max, Car pra, Mic hie, Pol acu, Ped lan, Sen lug, Ang luc, Rho int, Art arc, Pet fri, Ach mill, Pyr min, Ped sud, Rub cha, Aco del, Bis viv, Lis cor, Rub ste, Tri eur, lichen.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-6							N/A	Organic	hor:Oi
6-8	10YR2/1	100					No	Silt Loam	hor:A
8-20	10YR3/2	100					No	Sandy Loam	hor:B/C 80% Gravels

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type: None			
Depth (inches):			
Field Drainage Class: MWD - Moderately Well Drained			
		<b>Hydric Soil Present?</b>	Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Water moves rapidly through sandy gravels.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches):		
Water Table Present? Yes <input type="checkbox"/> X <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):	10.0	
Saturation Present? Yes <input type="checkbox"/> X <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):	6.0	
(includes capillary fringe)		
		<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> X <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Water drains rapidly through gravels.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR3054\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Dryopteris expansa	1	No	FACU
Viola langsdorffii	1	No	FACW

Additional Reference Data: Photos

HDR3054\_18



Photo Name: Photo\_180624101819



Photo Name: Photo\_180624101925





Photo Name: Photo\_180624101834



Photo Name: Photo\_180624101828



Photo Name: Photo\_180624101914



**Photo Name:** Photo\_180624101807



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 6/24/2018  
 Applicant/Owner: PLP Sampling Point: HDR3055\_18  
 Investigators: MS MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): Concave Slope(%): 2 HGM: N/A  
 Subregion (LRR): X Lat: 59.891258 Long: -155.432236 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Willow Tall Shrub (OWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: OWTS. Stream flows all the way through the polygon. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>7</u> x2= <u>14</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>129</u> x3= <u>387</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>4</u> x4= <u>16</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>55</u>				Column Totals: <u>140</u> (A) <u>417</u> (B)
50% of total cover: <u>27.5</u>				<u>Prevalence Index = B/A=</u> <u>2.98</u>
20% of total cover: <u>11</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Epilobium angustifolium</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Equisetum arvense</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Viola langsdorffii</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Rubus stellatus</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
7. <u>Viola epipsila</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Dryopteris expansa</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>85</u>				
50% of total cover: <u>42.5</u>				
20% of total cover: <u>17</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>10</u>				<b>Present?</b>
(Where applicable)				

Remarks:  
Trace: Car big, Luz mul, Com pal, Pol acu, Str amp, Ver vir, Ang luc, Ger eri, Aco del, Sen tri, Rub cha, Tri eur, Ane ric, Ste sit. Lots of bluejoint litter.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-7							N/A	Organic	hor:Oi
7-12	10YR2/2	100					No	Sandy Loam	hor:A *2
12-20	10YR3/1	40					No	Sandy Loam	hor:B/C Gravels 70%.
12-20	10YR3/4	69					No	Sandy Loam	hor:B/C Gravels 70%.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b> Type: none Depth (inches): Field Drainage Class: MWD - Moderately Well Drained	<b>Hydric Soil Present?</b> Yes    No    X
--	--

Remarks:    \*2: Gravels 15%. Pockets Of Organics.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b> Surface Water Present?    Yes    No    X    Depth (inches): Water Table Present?    Yes    X    No    Depth (inches): 12.0 Saturation Present?    Yes    X    No    Depth (inches): 5.0 (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes    X    No
--	--

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Heavy recent rainfall.

Geomorphic Position:

## Additional Reference Data: Photos

HDR3055\_18



**Photo Name:** Photo\_180624104727



**Photo Name:** Photo\_180624104733



**Photo Name:** Photo\_180624104744



## Additional Reference Data: Photos

HDR3055\_18



Photo Name: Photo\_180624104852



Photo Name: Photo\_180624104836



Photo Name: Photo\_180624104739

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 6/24/2018  
 Applicant/Owner: PLP Sampling Point: HDR3056\_18  
 Investigators: MS MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 7 HGM: Slope  
 Subregion (LRR): X Lat: 59.891132 Long: -155.437058 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1/3B

Vegetation Type: Ericaceous Shrub Bog (ESB)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: ESB Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Empetrum nigrum</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>6</u> x1= <u>6</u>
2. <u>Vaccinium uliginosum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>30</u> x2= <u>60</u>
3. <u>Betula nana</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	FAC species <u>138</u> x3= <u>414</u>
4. <u>Rhododendron tomentosum</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
5. <u>Salix fuscescens</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>174</u> (A) <u>480</u> (B)
Total Cover: <u>105</u>				<u>Prevalence Index = B/A=</u> <u>2.76</u>
50% of total cover: <u>52.5</u>				<b>Hydrophytic Vegetation Indicators:</b>
20% of total cover: <u>21</u>				<u>X</u> Dominance Test is >50%
<u>Herb Stratum</u>				<u>X</u> Prevalence Index is ≤3.0
1. <u>Carex bigelowii</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
2. <u>Rubus chamaemorus</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>	<u>      </u> data in Remarks or on a separate sheet)
3. <u>Carex aquatilis</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4. <u>Calamagrostis canadensis</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
5. <u>Carex pluriflora</u>	<u>1</u>	<u>No</u>	<u>OBL</u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>69</u>				
50% of total cover: <u>34.5</u>				
20% of total cover: <u>13.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>85</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>90</u>				<b>Present?</b>
(Where applicable)				

Remarks:  
 Trace: lichen, water, Sal pul, Vac vit, Vac oxy, And pol, Eri vag, Eri ang, Luz par, Ped lab, Pin vil.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-10							N/A	Organic	hor:Oi
10-11	10YR3/3	100					Yes	Silt Loam	hor:A
11-20	5Y3/2	100					Yes	Sandy Loam	hor:Bg *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		
Type: None		
Depth (inches):		
Field Drainage Class: PD - Poorly Drained		
	<b>Hydric Soil Present?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Remarks: \*3: Thixotropic. 10% Organic Inclusions.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		
Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 6.0		
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 14.0		
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 6.0 (includes capillary fringe)		
	<b>Wetland Hydrology Present?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Depressions between hummocks filled with water.

Geomorphic Position:



## Additional Reference Data: Photos

HDR3056\_18



Photo Name: Photo\_180624113954



Photo Name: Photo\_180624113838



Photo Name: Photo\_180624113820





Photo Name: Photo\_180624113811



Photo Name: Photo\_180624113826



Photo Name: Photo\_180624113934

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 6/24/2018  
 Applicant/Owner: PLP Sampling Point: HDR3058\_18  
 Investigators: MS MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 4 HGM: Slope  
 Subregion (LRR): X Lat: 59.891750 Long: -155.437607 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks: <u>OWLS. HGM slope. Wetter than normal antecedent precipitation</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
Sapling/Shrub Stratum				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by: <u>      </u>
2. <u>Spiraea stevenii</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	OBL species <u>3</u> x1= <u>3</u>
3. <u>Salix fuscescens</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	FACW species <u>15</u> x2= <u>30</u>
4. <u>Betula nana</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FAC species <u>80</u> x3= <u>240</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>13</u> x4= <u>52</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>70</u>				Column Totals: <u>111</u> (A) <u>325</u> (B)
50% of total cover: <u>35</u>				Prevalence Index = B/A= <u>2.93</u>
20% of total cover: <u>14</u>				
Herb Stratum				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>7</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Sanguisorba canadensis</u>	<u>7</u>	<u>Yes</u>	<u>FACW</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus chamaemorus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	data in Remarks or on a separate sheet)
5. <u>Eriophorum chamissonis s.l.</u>	<u>3</u>	<u>No</u>	<u>OBL</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Dryopteris expansa</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
7. <u>Equisetum arvense</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Lycopodium annotinum s.l.</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>41</u>				<b>Hydrophytic Vegetation Present?</b>
50% of total cover: <u>20.5</u>				
20% of total cover: <u>8.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				Yes <u>X</u> No <u>      </u>
% Cover of Wetland Bryophytes <u>20</u>				
(Where applicable)				

Remarks:  
 Trace: Poa arc, Ger eri, Pol acu, Str amp, Com pal, Vio lan, Rho int, Ang luc, Iri set, Tri eur, Pet fri, Rub ste, Val cap, Art arc.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A	Organic	hor:Oi
5-11							N/A	Organic	hor:Oe
11-20	2.5Y2.5/1	100					Yes	Silt Loam	hor:A *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type:   None		
Depth (inches):		
Field Drainage Class:   PD - Poorly Drained		

Remarks:    \*3: High Percentage Of Organic. Strong Alpha Alpha Reaction.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):		
Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):	9.0	
Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):	3.0	
(includes capillary fringe)		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position: Swale

## Additional Reference Data: Photos

HDR3058\_18



**Photo Name:** Photo\_180624125818



**Photo Name:** Photo\_180624125738



**Photo Name:** Photo\_180624125728



## Additional Reference Data: Photos

HDR3058\_18



Photo Name: Photo\_180624125806



Photo Name: Photo\_180624125835



Photo Name: Photo\_180624125746



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/24/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3059_18</u>	
Investigators: <u>MS MD</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>10</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.893555</u>	Long: <u>-155.435242</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Closed Willow Tall Shrub (CWTS)</u>		NWI Classification: <u>PSS1B</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: <u>CWTS. From beginning of transect (south) to here is wetland. Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Salix pulchra</u>	80	Yes	FAC	OBL species <u>5</u> x1= <u>5</u>
2. <u>Alnus sinuata</u>	5	No	FAC	FACW species <u>10</u> x2= <u>20</u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>140</u> x3= <u>420</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>12</u> x4= <u>48</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>167</u> (A) <u>493</u> (B)
Total Cover: <u>85</u>				<u>Prevalence Index = B/A=</u> <u>2.95</u>
50% of total cover: <u>42.5</u>				
20% of total cover: <u>17</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	45	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	10	No	FACW	<u>X</u> Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	5	No	FAC	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Gymnocarpium dryopteris</u>	5	No	FACU	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Potentilla palustris</u>	5	No	OBL	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Dryopteris expansa</u>	4	No	FACU	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Equisetum sylvaticum</u>	2	No	FAC	
8. <u>Viola epipsila</u>	2	No	FAC	
9. <u>Epilobium angustifolium</u>	2	No	FACU	
10. <u>Athyrium cyclosum</u>	1	No	FAC	
Total Cover: <u>82</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>41</u>				
20% of total cover: <u>16.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>20</u>		
(Where applicable)				

Remarks:

Trace: Car pra, Val cap, Ang luc, Ang gen, Ver vir, Aco del, Sen tri, Ger eri, Pet fri, Pyr asa, Rub ste, Tri eur, Vio lan, Car umb, water.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-6							No	Organic	hor:Oi
6-9	2.5Y3/2	85	5YR4/6	15	C	PL	Yes	Silt Loam	hor:A
9-20	5Y3/2	85	5YR4/6	15	C	PL	Yes	Silt Loam	hor:B *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input checked="" type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type:   None		
Depth (inches):		
Field Drainage Class:   PD - Poorly Drained		

Remarks:    \*3: Matrix is 50% organic, separate from the mineral soil (inclusions). 2% sand.

HYDROLOGY

Wetland Hydrology Indicators:				Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)				<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)		<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)		<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)		<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)				<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)				<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)				<input type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b>				<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Surface Water Present?	Yes	<input checked="" type="checkbox"/>	No		
Water Table Present?	Yes	<input checked="" type="checkbox"/>	No		
Saturation Present?	Yes	<input checked="" type="checkbox"/>	No		
(includes capillary fringe)					
Depth (inches):		1.0			
Depth (inches):		7.0			
Depth (inches):		2.0			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
This is a drier area than the surrounding area.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3059\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Heracleum maximum	1	No	FACU

Additional Reference Data: Photos

HDR3059\_18



Photo Name: Photo\_180624135044



Photo Name: Photo\_180624135013



## Additional Reference Data: Photos

HDR3059\_18



**Photo Name:** Photo\_180624135117



**Photo Name:** Photo\_180624135019



**Photo Name:** Photo\_180624134958



**Photo Name:** Photo\_180624135002

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 6/24/2018  
 Applicant/Owner: PLP Sampling Point: HDR3061\_18  
 Investigators: MS MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 15 HGM: N/A  
 Subregion (LRR): X Lat: 59.895489 Long: -155.434586 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: CWTS. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index worksheet:</b> Total % Cover of: <u>      </u> Multiply by: <u>      </u>				
OBL species <u>      </u> x1= <u>      </u>				
FACW species <u>5</u> x2= <u>10</u>				
FAC species <u>147</u> x3= <u>441</u>				
FACU species <u>18</u> x4= <u>72</u>				
UPL species <u>      </u> x5= <u>      </u>				
Column Totals: <u>170</u> (A) <u>523</u> (B)				
Prevalence Index = B/A= <u>3.08</u>				
<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix pulchra</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>80</u>				
50% of total cover: <u>40</u>				
20% of total cover: <u>16</u>				

Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Calamagrostis canadensis</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Gymnocarpium dryopteris</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	
3. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
4. <u>Dryopteris expansa</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
5. <u>Equisetum arvense</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
6. <u>Veratrum viride</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
7. <u>Epilobium angustifolium</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>90</u>				
50% of total cover: <u>45</u>				
20% of total cover: <u>18</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <sup>5</sup> <u>      </u>				
(Where applicable)				

Remarks:  
 Lots of litter. Trace: Aln sin, Rib gla, Ang gen, Equ syl, Ger eri, Pet fri, Vio lan, Tri eur, Rub ste, Pyr min, Ang luc, Ado mos.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A	Organic	hor:Oi
3-4	7.5YR2.5/2	100					N/A	Silt Loam	hor:A
4-6	10YR3/2	100					N/A	Silt Loam	hor:B1
6-8							N/A	Sand	hor:C Coarse Sand. Color variegated.
8-12	10YR3/2	45	5YR4/6	10	C	PL	N/A	Sandy Loam	hor:B2 10% Pockets Of Sand.
8-12	10YR4/4	45					N/A	Sandy Loam	hor:B2 10% Pockets Of Sand.
12-14	10YR2/2	90	5YR4/6	10	C	PL	N/A	Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☐ Histosol or Histel (A1)

☐ Histic Epipedon (A2)

☐ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☐ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder

☐ Underlying Layer

☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  

Type:  None

Depth (inches):

Field Drainage Class:  WD - Well Drained

**Hydric Soil Present?**

Yes

No

X

Remarks: 14"+ cobble/boulder.

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  

☐ Surface Water (A1)

☐ High Water Table (A2)

☐ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☐ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☐ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☐ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☐ FAC-Neutral Test (D5)

**Field Observations:**  

Surface Water Present?

Yes

No

X

Water Table Present?

Yes

No

X

Saturation Present?

Yes

No

X

Depth (inches):

Depth (inches):

Depth (inches):

(includes capillary fringe)

**Wetland Hydrology Present?**

Yes

No

X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Dry.

Geomorphic Position:

## Additional Reference Data: Photos

HDR3061\_18



Photo Name: Photo\_180624150136



Photo Name: Photo\_180624150238



Photo Name: Photo\_180624150131



## Additional Reference Data: Photos

HDR3061\_18



**Photo Name:** Photo\_180624150121



**Photo Name:** Photo\_180624150126



**Photo Name:** Photo\_180624150204



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/7/2018  
 Applicant/Owner: PLP Sampling Point: HDR3064\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 12 HGM: N/A  
 Subregion (LRR): X Lat: 59.906097 Long: -155.396744 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>67</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index worksheet:</b>				
Total % Cover of:		Multiply by:		
OBL species	<u>      </u>	x1=	<u>      </u>	
FACW species	<u>6</u>	x2=	<u>12</u>	
FAC species	<u>109</u>	x3=	<u>327</u>	
FACU species	<u>30</u>	x4=	<u>120</u>	
UPL species	<u>      </u>	x5=	<u>      </u>	
Column Totals:	<u>145</u> (A)		<u>459</u> (B)	
Prevalence Index = B/A=				<u>3.17</u>
<b>Hydrophytic Vegetation Indicators:</b>				
X Dominance Test is >50%				
Prevalence Index is ≤3.0				
Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)				
Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix pulchra</u>	<u>85</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Spiraea stevenii</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>90</u>				
50% of total cover: <u>45</u>				
20% of total cover: <u>18</u>				
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Dryopteris expansa</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
4. <u>Rubus stellatus</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
5. <u>Chamaenerion angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
6. <u>Equisetum arvense</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
7. <u>Polemonium acutiflorum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
8. <u>Anemone narcissiflora</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
9. <u>Gymnocarpium dryopteris</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
10. <u>Trientalis europaea</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>55</u>				
50% of total cover: <u>27.5</u>				
20% of total cover: <u>11</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				% Bare Ground <u>0</u>
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <sup>5</sup> <u>      </u>		
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-6									hor:Oe
6-14	10YR2/1	100					No	Loam	hor:A
14-16	10YR3/2	100					No	Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input checked="" type="checkbox"/> X No <input type="checkbox"/> Depth (inches): 16.0	
Saturation Present? Yes <input checked="" type="checkbox"/> X No <input type="checkbox"/> Depth (inches): 15.0	
(includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Stream in plot, goes subterranean at about equal elevation of plot.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3064\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Viola langsdorffii	1	No	FACW

Additional Reference Data: Photos

HDR3064\_18



Photo Name: Photo\_180707091505



Photo Name: Photo\_180707091417



## Additional Reference Data: Photos

HDR3064\_18



**Photo Name:** Photo\_180707091242



**Photo Name:** Photo\_180707091204



**Photo Name:** Photo\_180707091218



**Photo Name:** Photo\_180707091152

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/7/2018  
 Applicant/Owner: PLP Sampling Point: HDR3067\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): Convex Slope(%): 12 HGM: N/A  
 Subregion (LRR): X Lat: 59.906223 Long: -155.396774 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Willow Low Shrub (CWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b> Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Entire mosaic polygon is upland with two streams running through 3065, 3066. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
Total Cover: <u>      </u>				<b>Prevalence Index worksheet:</b> Total % Cover of: <u>      </u> Multiply by: <u>      </u> OBL species <u>      </u> x1= <u>      </u> FACW species <u>10</u> x2= <u>20</u> FAC species <u>109</u> x3= <u>327</u> FACU species <u>11</u> x4= <u>44</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>130</u> (A) <u>391</u> (B)
50% of total cover: <u>0</u>				
20% of total cover: <u>0</u>				
<b>Sapling/Shrub Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
1. <u>Salix pulchra</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Empetrum nigrum</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
3. <u>Spiraea stevenii</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>84</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>42</u>				
20% of total cover: <u>16.8</u>				
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Sanguisorba canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Rubus stellatus</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
4. <u>Angelica lucida</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
5. <u>Chamaenerion angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
6. <u>Lycopodium annotinum s.l.</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
7. <u>Equisetum arvense</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
8. <u>Micranthes nelsoniana</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
9. <u>Pyrola grandiflora</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Rhodiola integrifolia</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>46</u>				
50% of total cover: <u>23</u>				
20% of total cover: <u>9.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>10</u>				
(Where applicable)				

Remarks:  
 Lighter aerial signature.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-5	10YR3/2	100						Silt Loam	hor:A
5-20	10YR2/2	100					N/A	Loam	hor:B/C *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		

Remarks: No hydric soil indicators observed.    \*3: 40% subangular cobble,    30% subangular gravels

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/>	Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/>	Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/>	Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/>	Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/>	Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/>	Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/>	Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/>	FAC-Neutral Test (D5)

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Dry. No primary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3067\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Anemone narcissiflora	1	No	FACU
Geranium erianthum	1	No	FACU
Streptopus amplexifolius	1	No	FACU
Trientalis europaea	1	No	FACU

Additional Reference Data: Photos

HDR3067\_18



Photo Name: Photo\_180707101324



Photo Name: Photo\_180707101207





**Photo Name:** Photo\_180707101154



**Photo Name:** Photo\_180707101255



**Photo Name:** Photo\_180707101200





Photo Name: Photo\_180707101214

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/7/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3068_18</u>	
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): <u>5</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.907257</u>	Long: <u>-155.395996</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Dwarf Ericaceous Shrub Tundra (DEST)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: <u>Near boundary with 3069. Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>      </u>			
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	

Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Empetrum nigrum</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Vaccinium vitis-idaea</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
4. <u>Betula nana</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
5. <u>Rhododendron tomentosum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
6. <u>Salix pulchra</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover:	<u>96</u>			
50% of total cover:	<u>48</u>	20% of total cover:	<u>19.2</u>	

Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Carex bigelowii</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Cornus suecica</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Hierochloa alpina</u>	<u>5</u>	<u>Yes</u>	<u>NL</u>	
4. <u>Carex podocarpa</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
5. <u>Festuca altaica</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
6. <u>Anemone narcissiflora</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
7. <u>Angelica lucida</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
8. <u>Lycopodium annotinum s.l.</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
9. <u>Pedicularis capitata</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
10. <u>Sanguisorba canadensis</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
Total Cover:	<u>26</u>			
50% of total cover:	<u>13</u>	20% of total cover:	<u>5.2</u>	
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>0</u>	% Cover of Bryophytes <u>10</u>			
(Where applicable)				

Remarks:

Near boundary.

**Dominance Test Worksheet:**  
 Number of Dominant Species  
 That Are OBL, FACW, or FAC: 4 (A)  
 Total Number of Dominant  
 Species Across All Strata: 5 (B)  
 Percent of Dominant Species  
 That Are OBL, FACW, or FAC: 80 (A/B)

**Prevalence Index worksheet:**  
 Total % Cover of:        Multiply by:         
 OBL species 1 x1= 1  
 FACW species 1 x2= 2  
 FAC species 107 x3= 321  
 FACU species 5 x4= 20  
 UPL species 8 x5= 40  
 Column Totals: 122 (A) 384 (B)  
  
 Prevalence Index = B/A= 3.15

**Hydrophytic Vegetation Indicators:**  
 X Dominance Test is >50%  
 Prevalence Index is ≤3.0  
 Morphological Adaptations<sup>1</sup> (Provide  
     data in Remarks or on a separate sheet)  
 Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology  
 must be present, unless disturbed or problematic.

Remarks:

Near boundary.

**Hydrophytic  
Vegetation  
Present?**  
  
 Yes X No

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-4									hor:Oe
4-13	10YR2/2	100					No	Loam	hor:A 25% gravels
13-20	10YR3/3	100					No	Sandy Loam	hor:B 50% subangular gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	
Type:	<u>None</u>		
Depth (inches):	<u>N/A</u>		
Field Drainage Class:	<u>MWD - Moderately Well Drained</u>		

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):			
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
High antecedent precipitation.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR3068\_18

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
Arnica lessingii	1	No	NL
Artemisia arctica	1	No	NL
Laqotis glauca s.l.	1	No	NL
Trichophorum caespitosum	1	No	OBL
<b>Sapling/Shrub</b>			
Spiraea stevenii	1	No	FACU

Additional Reference Data: Photos

HDR3068\_18



Photo Name: Photo\_180707111450



Photo Name: Photo\_180707111440





Photo Name: Photo\_180707111547



Photo Name: Photo\_180707111423



Photo Name: Photo\_180707111531



**Photo Name:** Photo\_180707111431



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/7/2018  
 Applicant/Owner: PLP Sampling Point: HDR3069\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Bench  
 Local Relief (concave, convex, none): Concave Slope(%): 4 HGM: N/A  
 Subregion (LRR): X Lat: 59.907043 Long: -155.395340 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra (DEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	

Remarks: Bench. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>6</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>6</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Empetrum nigrum</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>Vaccinium uliginosum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>7</u> x2= <u>14</u>
3. <u>Betula nana</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FAC species <u>136</u> x3= <u>408</u>
4. <u>Loiseleuria procumbens</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	FACU species <u>4</u> x4= <u>16</u>
5. <u>Andromeda polifolia</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	UPL species <u>8</u> x5= <u>40</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>155</u> (A) <u>478</u> (B)
Total Cover: <u>114</u>				<u>Prevalence Index = B/A=</u> <u>3.08</u>
50% of total cover: <u>57</u>				
20% of total cover: <u>22.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Prevalence Index is ≤3.0
3. <u>Carex podocarpa</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Hierochloe alpina</u>	<u>4</u>	<u>No</u>	<u>NL</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Rhodiola integrifolia</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
7. <u>Salix pulchra</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Anemone narcissiflora</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	must be present, unless disturbed or problematic.
9. <u>Angelica lucida</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
10. <u>Pedicularis langsдорфii</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
Total Cover: <u>41</u>				<b>Hydrophytic</b>
50% of total cover: <u>20.5</u>				<b>Vegetation</b>
20% of total cover: <u>8.2</u>				Yes <u>X</u> No <u>      </u>
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Present?</b>
% Bare Ground <u>1</u>				
% Cover of Wetland Bryophytes <u>1</u>				
% Cover of Bryophytes <u>25</u>				
(Where applicable)				

Remarks:

Trace: Ran tur, Pri cun. Water 1-2%.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-3									hor:Oe
3-4									hor:Oa
4-13	10YR2/2	100					No	Loam	hor:A *4
13-20	10YR3/3	100					No	Sandy Loam	hor:B *5

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	SPD - Somewhat Poorly Drained		

Remarks: Bench. Recently snow melted and high antecedent precipitation. No hydric soil indicators observed.    \*4: 25% subangular gravel, 5% subangular cobble    \*5: 25% subangular gravel, 10% subangular cobble

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	2.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	3.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	1.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Recently snow melted. Fed by upstream snow. Water moves quickly downslope.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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Herb	Absolute % Cover	Dominant Species?	Indicator Status
Arnica lessingii	1	No	NL
Artemisia arctica	1	No	NL
Laqotis glauca s.l.	1	No	NL
Campanula lasiocarpa	1	No	UPL

Additional Reference Data: Photos

HDR3069\_18



Photo Name: Photo\_180707124846



Photo Name: Photo\_180707124912



## Additional Reference Data: Photos

HDR3069\_18



**Photo Name:** Photo\_180707124922



**Photo Name:** Photo\_180707124828



**Photo Name:** Photo\_180707124818

## Additional Reference Data: Photos

HDR3069\_18



**Photo Name:** Photo\_180707124838

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/7/2018  
 Applicant/Owner: PLP Sampling Point: HDR3070\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 4 HGM: Slope  
 Subregion (LRR): X Lat: 59.907307 Long: -155.396957 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1/EM1C

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Carex (DEST-C)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Nesting least sandpiper. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Vaccinium uliginosum</u>	30	Yes	FAC	OBL species <u>31</u> x1= <u>31</u>
2. <u>Empetrum nigrum</u>	15	Yes	FAC	FACW species <u>5</u> x2= <u>10</u>
3. <u>Rhododendron tomentosum</u>	5	No	FAC	FAC species <u>91</u> x3= <u>273</u>
4. <u>Salix pulchra</u>	5	No	FAC	FACU species <u>3</u> x4= <u>12</u>
5. <u>Betula nana</u>	3	No	FAC	UPL species <u>4</u> x5= <u>20</u>
6. <u>Spiraea stevenii</u>	2	No	FACU	Column Totals: <u>134</u> (A) <u>346</u> (B)
Total Cover: <u>62</u>				<u>Prevalence Index = B/A=</u> <u>2.58</u>
50% of total cover: <u>31</u>				
20% of total cover: <u>12.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Trichophorum caespitosum</u>	30	Yes	OBL	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	10	Yes	FAC	<u>X</u> Prevalence Index is ≤3.0
3. <u>Carex bigelowii</u>	5	No	FAC	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex podocarpa</u>	5	No	FAC	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Equisetum arvense</u>	5	No	FAC	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Cornus suecica</u>	3	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Iris setosa</u>	2	No	FAC	
8. <u>Polygonum viviparum</u>	1	No	FAC	
9. <u>Senecio lugens</u>	1	No	FAC	
10. <u>Tofieldia pusilla</u>	1	No	FAC	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
Total Cover: <u>72</u>				
50% of total cover: <u>36</u>				
20% of total cover: <u>14.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>10</u>		% Cover of Bryophytes <u>40</u>		
(Where applicable)				

Remarks:  
Large hummocks as well as high percentage of trichophorum.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi
2-6									hor:Oe
6-8									hor:Oa
8-14	10YR2/2	100					No	Loam	hor:A
14-24	7.5YR3/4	40					No	Sandy Loam	hor:B *5
14-24	7.5YR4/6	40					No	Sandy Loam	hor:B *6
14-24	10YR2/2	20					No	Sandy Loam	hor:B *7

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:

<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

Restrictive Layer (if present):

Type: None  
Depth (inches): N/A  
Field Drainage Class: SPD - Somewhat Poorly Drained

Hydric Soil Present? Yes ☒ No ☐

Remarks: \*5: 10% gravel, 10% subangular cobble \*6: 10% gravel, 10% subangular cobble \*7: 10% gravel, 10% subangular cobble

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Algal Mat or Crust (B4)	
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Surface Soil Cracks (B6)	

Secondary Indicators (2 or more required)

<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Microtopographic Relief (D4)
<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	<input checked="" type="checkbox"/>	No	Depth (inches):	2.0
Water Table Present?	Yes	<input checked="" type="checkbox"/>	No	Depth (inches):	0.0
Saturation Present?	Yes	<input checked="" type="checkbox"/>	No	Depth (inches):	0.0
(includes capillary fringe)					

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
Pedicularis capitata	1	No	FACU
Erigeron peregrinus	1	No	FACW
Petasites frigidus s.l.	1	No	FACW
Rubus chamaemorus	1	No	FACW
Arnica lessingii	1	No	NL
Artemisia arctica	1	No	NL
Hierochloe alpina	1	No	NL
Laqotis qlauca s.l.	1	No	NL
Eriophorum anqustifolium	1	No	OBL
<b>Sapling/Shrub</b>			
Andromeda polifolia	1	No	FACW
Salix fuscescens	1	No	FACW

Additional Reference Data: Photos

HDR3070\_18



Photo Name: Photo\_180707135451



Photo Name: Photo\_180707135337



## Additional Reference Data: Photos

HDR3070\_18



**Photo Name:** Photo\_180707135351



**Photo Name:** Photo\_180707135400



**Photo Name:** Photo\_180707135328





Photo Name: Photo\_180707135417



Photo Name: Photo\_180707141605

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/7/2018  
 Applicant/Owner: PLP Sampling Point: HDR3071\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): \_\_\_\_\_ Slope(%): 7 HGM: N/A  
 Subregion (LRR): X Lat: 59.908039 Long: -155.396500 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If No, explain in Remarks)  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b>  Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: <u>Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. _____	_____	_____	_____	Number of Dominant Species
2. _____	_____	_____	_____	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. _____	_____	_____	_____	Total Number of Dominant
4. _____	_____	_____	_____	Species Across All Strata: <u>4</u> (B)
Total Cover: _____				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>75</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> _____ <u>Multiply by:</u> _____
1. Empetrum nigrum	20	Yes	FAC	OBL species _____ x1= _____
2. Rhododendron tomentosum	10	Yes	FAC	FACW species <u>12</u> x2= <u>24</u>
3. Spiraea stevenii	10	Yes	FACU	FAC species <u>96</u> x3= <u>288</u>
4. Betula nana	5	No	FAC	FACU species <u>23</u> x4= <u>92</u>
5. Salix pulchra	5	No	FAC	UPL species <u>3</u> x5= <u>15</u>
6. Vaccinium uliginosum	5	No	FAC	Column Totals: <u>134</u> (A) <u>419</u> (B)
Total Cover: <u>56</u>				<u>Prevalence Index = B/A=</u> <u>3.13</u>
50% of total cover: <u>28</u>				<b>Hydrophytic Vegetation Indicators:</b>
20% of total cover: <u>11.2</u>				<u>X</u> Dominance Test is >50%
<u>Herb Stratum</u>				Prevalence Index is ≤3.0
1. Calamagrostis canadensis	40	Yes	FAC	Morphological Adaptations <sup>1</sup> (Provide
2. Chamaenerion angustifolium	7	No	FACU	data in Remarks or on a separate sheet)
3. Sanguisorba canadensis	7	No	FACW	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4. Aconitum delphinifolium	3	No	FAC	
5. Cornus suecica	2	No	FAC	
6. Dryopteris expansa	2	No	FACU	
7. Rubus chamaemorus	2	No	FACW	
8. Viola langsдорffii	2	No	FACW	
9. Polemonium acutiflorum	1	No	FAC	
10. Rhodiola integrifolia	1	No	FAC	
Total Cover: <u>78</u>				
50% of total cover: <u>39</u>				
20% of total cover: <u>15.6</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <sup>5</sup> _____				
(Where applicable)				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____				
Remarks: <u>Very close to BH.</u>				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oe
3-4									hor:Oa
4-12	10YR2/2	100					No	Loam	hor:A With some organic staining
12-16	10YR2/2	100					No	Sandy Loam	hor:B
16-20	2.5YR1/3	100					No	Loamy Sand	hor:B/C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
Type:	None	
Depth (inches):	N/A	
Field Drainage Class:	MWD - Moderately Well Drained	

Remarks: Soil dug at lowest point between two hummocks. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Pit dug in lowest part between two hummocks. 2-3ft hummocks. Wetter than normal antecedent precipitation.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR3071\_18

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
Rubus stellatus	1	No	FAC
Valeriana capitata	1	No	FAC
Veratrum viride	1	No	FAC
Angelica lucida	1	No	FACU
Polygonum bistorta ssp. plumosum	1	No	FACU
Streptopus amplexifolius	1	No	FACU
Trientalis europaea	1	No	FACU
Eriqeron peregrinus	1	No	FACW
Arnica lessingii	1	No	NL
Artemisia arctica	1	No	NL
Laqotis glauca s.l.	1	No	NL
<b>Sapling/Shrub</b>			
Vaccinium vitis-idaea	1	No	FAC

Additional Reference Data: Photos

HDR3071\_18



Photo Name: Photo\_180707155008



Photo Name: Photo\_180707154948



## Additional Reference Data: Photos

HDR3071\_18



Photo Name: Photo\_180707155055



Photo Name: Photo\_180707155103



Photo Name: Photo\_180707155001



**Photo Name:** Photo\_180707155013



Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	7/8/2018
Applicant/Owner:	PLP			Sampling Point:	HDR3073_18
Investigators:	MS, AH	Landform (hillslope, terrace, etc.):	Hillslope		
Local Relief (concave, convex, none):	None	Slope(%):	4	HGM:	N/A
Subregion (LRR):	X	Lat:	59.889011	Long:	-155.394791
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			

Tree Stratum				Dominance Test Worksheet:			
		Absolute % Cover	Dominant Species?	Indicator Status	Number of Dominant Species		
1.					That Are OBL, FACW, or FAC: 3 (A)		
2.					Total Number of Dominant		
3.					Species Across All Strata: 3 (B)		
4.					Percent of Dominant Species		
Total Cover:					That Are OBL, FACW, or FAC: 100 (A/B)		
50% of total cover:		0	20% of total cover:		0		
Sapling/Shrub Stratum				Prevalence Index worksheet:			
					Total % Cover of:		Multiply by:
1.	Salix pulchra	75	Yes	FAC	OBL species	x1=	
2.	Empetrum nigrum	1	No	FAC	FACW species	24 x2=	48
3.	Spiraea stevenii	1	No	FACU	FAC species	118 x3=	354
4.					FACU species	4 x4=	16
5.					UPL species	x5=	
6.					Column Totals:	146 (A)	418 (B)
Total Cover:		77	20% of total cover:		15.4	Prevalence Index = B/A= 2.86	
50% of total cover:		38.5					
Herb Stratum				Hydrophytic Vegetation Indicators:			
1.	Calamagrostis canadensis	25	Yes	FAC	X	Dominance Test is >50%	
2.	Sanguisorba canadensis	20	Yes	FACW	X	Prevalence Index is ≤3.0	
3.	Carex bigelowii	5	No	FAC		Morphological Adaptations <sup>1</sup> (Provide	
4.	Equisetum arvense	4	No	FAC		data in Remarks or on a separate sheet)	
5.	Rhodiola integrifolia	3	No	FAC		Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
6.	Geranium erianthum	2	No	FACU			
7.	Rubus chamaemorus	2	No	FACW			
8.	Anemone richardsonii	1	No	FAC			
9.	Polemonium acutiflorum	1	No	FAC			
10.	Rubus stellatus	1	No	FAC			
Total Cover:		69	20% of total cover:		13.8		
50% of total cover:		34.5					
Plot size (radius, or length x width) 1/10 acre				% Bare Ground 0			
% Cover of Wetland Bryophytes 0		% Cover of Bryophytes 50					
(Where applicable)							
				Hydrophytic Vegetation Present? Yes X No			

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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oe
1-4	10YR 3/2	100						Loam	hor:A With organic staining
4-7	10YR 3/2	100					No	Sandy Loam	hor:E
7-8	7.5YR 2.5/2	100					No	Loam	hor:B
8-20	10YR 4/4	100					No	Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X					
Type:	None							
Depth (inches):	N/A							
Field Drainage Class:	MWD - Moderately Well Drained							

Remarks: 20"+ cobble. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>			
Water Table Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>			
Saturation Present? (includes capillary fringe)	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Heavy rainfall currently. Lots of water flowing on surface of hillside. Wetter than normal antecedent precipitation.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3073\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Valeriana capitata	1	No	FAC
Viola epipsila	1	No	FAC
Lycopodium annotinum s.l.	1	No	FACU
Carex membranacea	1	No	FACW
Petasites frigidus s.l.	1	No	FACW

Additional Reference Data: Photos

HDR3073\_18



Photo Name: Photo\_180708082559



Photo Name: Photo\_180708082551



## Additional Reference Data: Photos

HDR3073\_18



**Photo Name:** Photo\_180708082805



**Photo Name:** Photo\_180708082611



**Photo Name:** Photo\_180708082623



Photo Name: Photo\_180708082822

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/8/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3074_18</u>	
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>2</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.889053</u>	Long: <u>-155.395035</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Subarctic Sedge – Moss Wet Meadow (SSMWM)</u>		NWI Classification: <u>PSS1/EM1C</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>Wetter than normal antecedent precipitation</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>30</u> <u>Multiply by:</u> <u>      </u>
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	OBL species <u>30</u> x1= <u>30</u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>16</u> x2= <u>32</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>41</u> x3= <u>123</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>2</u> x4= <u>8</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>20</u>				Column Totals: <u>89</u> (A) <u>193</u> (B)
50% of total cover: <u>10</u>				<u>Prevalence Index = B/A=</u> <u>2.17</u>
20% of total cover: <u>4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex aquatilis</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>12</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Sanguisorba canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Comarum palustre</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Eriophorum angustifolium</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Anemone richardsonii</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Rhodiola integrifolia</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
8. <u>Rubus chamaemorus</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
9. <u>Cornus suecica</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Luzula parviflora</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>69</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>34.5</u>				
20% of total cover: <u>13.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>60</u>		% Cover of Bryophytes <u>90</u>		
(Where applicable)				
Remarks: <u>Pockets of BH and DEST-H mixed in. Multiple streams popping out of slope break flowing through wetland and then going back underground.</u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-4							N/A		hor:Oe
4-9	10YR3/3	100					Yes	Loam	hor:A
9-16	10YR2/2	100					Yes	Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	SPD - Somewhat Poorly Drained		
		<b>Hydric Soil Present?</b>	Yes <u>  X  </u> No <u>      </u>

Remarks: Cobbles at 16"+. H2S at 4".

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Water-stained Leaves (B9)			
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Drainage Patterns (B10)			
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)			
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)			
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)			
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)			
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)			

Field Observations:									
Surface Water Present?	Yes	<u>X</u>	No	<u>        </u>	Depth (inches):	<u>        </u>	6.0	<u>        </u>	Wetland Hydrology Present?      Yes <u>  X  </u> No <u>        </u>
Water Table Present?	Yes	<u>X</u>	No	<u>        </u>	Depth (inches):	<u>        </u>	3.0	<u>        </u>	
Saturation Present?	Yes	<u>X</u>	No	<u>        </u>	Depth (inches):	<u>        </u>	0.0	<u>        </u>	
(includes capillary fringe)									

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Streams running through. Pockets of water between hummocks.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3074\_18

	Absolute % Cover	Dominant Species?	Indicator Status
Herb			
Micranthes nelsoniana	1	No	FAC
Polygonum viviparum	1	No	FAC
Pyrola grandiflora	1	No	FAC
Angelica lucida	1	No	FACU
Listera cordata	1	No	FACU
Pedicularis sudetica	1	No	FACW
Petasites frigidus s.l.	1	No	FACW
Platanthera obtusata	1	No	FACW
Viola lanqsdorffii	1	No	FACW

Additional Reference Data: Photos

HDR3074\_18



Photo Name: Photo\_180708091925



Photo Name: Photo\_180708092010



## Additional Reference Data: Photos

HDR3074\_18



**Photo Name:** Photo\_180708091945



**Photo Name:** Photo\_180708091937



**Photo Name:** Photo\_180708091930





Photo Name: Photo\_180708092001

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/8/2018  
 Applicant/Owner: PLP Sampling Point: HDR3077\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): Convex Slope(%): 16 HGM: N/A  
 Subregion (LRR): X Lat: 59.889423 Long: -155.395203 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Bluejoint Herb (BH)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			
Remarks: <u>Wetter than normal antecedent precipitation</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Vaccinium uliginosum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Arctostaphylos alpina</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>45</u> x2= <u>90</u>
4. <u>Vaccinium vitis-idaea</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>94</u> x3= <u>282</u>
5. <u>Salix reticulata</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACU species <u>18</u> x4= <u>72</u>
6. <u>Spiraea stevenii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	UPL species <u>3</u> x5= <u>15</u>
Total Cover: <u>49</u>				Column Totals: <u>160</u> (A) <u>459</u> (B)
50% of total cover: <u>24.5</u>				Prevalence Index = B/A= <u>2.87</u>
20% of total cover: <u>9.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Geranium erianthum</u>	<u>12</u>	<u>No</u>	<u>FACU</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex bigelowii</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Carex stylosa</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Festuca altaica</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
7. <u>Rhodiola integrifolia</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
8. <u>Anemone narcissiflora</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
9. <u>Viola langsdoeffii</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
10. <u>Artemisia arctica</u>	<u>2</u>	<u>No</u>	<u>NL</u>	
Total Cover: <u>111</u>				
50% of total cover: <u>55.5</u>				
20% of total cover: <u>22.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				% Bare Ground <u>0</u>
% Cover of Wetland Bryophytes <u>0</u>				% Cover of Bryophytes <u>60</u>
(Where applicable)				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Remarks: Some pockets of DEST, overall BH community. Almost DEST-C (In DEST pockets), but Carex component not high enough.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oe
3-4									hor:Oa
4-8	7.5YR2.5/1	100					No	Loam	hor:A
8-20	7.5YR2.5/2	100					No	Sandy Loam	hor:B/C 50% subangular gravel.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: Cobbles at 20"+. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Microtopographic Relief (D4)
	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No water in the pit or saturation. No primary hydrology indicators observed.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR3077\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Rubus stellatus	1	No	FAC
Valeriana capitata	1	No	FAC
Veratrum viride	1	No	FAC
Angelica lucida	1	No	FACU
Trientalis europaea	1	No	FACU
Epilobium hornemannii	1	No	FACW
Eriqeron peregrinus	1	No	FACW
Rubus chamaemorus	1	No	FACW
Arnica lessinqii	1	No	NL

Additional Reference Data: Photos

HDR3077\_18



Photo Name: Photo\_180708102850



Photo Name: Photo\_180708101838

## Additional Reference Data: Photos

HDR3077\_18



**Photo Name:** Photo\_180708101830



**Photo Name:** Photo\_180708101821



**Photo Name:** Photo\_180708102842





Photo Name: Photo\_180708101816



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/8/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3078_18</u>	
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Bench</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>2</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.889740</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PEM1F</u>	

Vegetation Type: Subarctic Sedge – Moss Wet Meadow (SSMWM)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		

Remarks: Small bench feature at slope break. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix fuscescens</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	<u>Total % Cover of:</u> <u>56</u> <u>Multiply by:</u>
2. <u>Salix pulchra</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>56</u> x1= <u>56</u>
3. <u>Empetrum nigrum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACW species <u>22</u> x2= <u>44</u>
4. <u>Vaccinium uliginosum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FAC species <u>18</u> x3= <u>54</u>
5. <u>Andromeda polifolia</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	FACU species <u>2</u> x4= <u>8</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>1</u> x5= <u>5</u>
Total Cover: <u>30</u>				Column Totals: <u>99</u> (A) <u>167</u> (B)
50% of total cover: <u>15</u>				<u>Prevalence Index = B/A=</u> <u>1.69</u>
20% of total cover: <u>6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Eriophorum angustifolium</u>	<u>40</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex aquatilis</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Rubus chamaemorus</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Equisetum arvense</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Polygonum viviparum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Rhodiola integrifolia</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Rubus stellatus</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
8. <u>Listera cordata</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
9. <u>Pedicularis capitata</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
10. <u>Pedicularis langsдорffii</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
Total Cover: <u>69</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>34.5</u>				
20% of total cover: <u>13.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>O</u>				
% Cover of Wetland Bryophytes <u>65</u>		% Cover of Bryophytes <u>95</u>		
(Where applicable)				

Remarks:

DEST-H wetland on edges. Map as SSMWM.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-6									hor:Oe
6-12	10YR2/2	100					No	Silt Loam	hor:A High percentage of organics.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/>	No
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks: H2S at 4". Cobble at 12+.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> Surface Water (A1)		<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):	3.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):	0.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):	0.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position: Plot at slope break. Bench.

Additional Reference Data: Overflow Vegetation

HDR3078\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Pedicularis sudetica	1	No	FACW
Petasites frigidus s.l.	1	No	FACW
Rumex arcticus	1	No	FACW
Primula eximia	1	No	NL
Comarum palustre	1	No	OBL

Additional Reference Data: Photos

HDR3078\_18



Photo Name: Photo\_180708105952



Photo Name: Photo\_180708110028



## Additional Reference Data: Photos

HDR3078\_18



**Photo Name:** Photo\_180708110036



**Photo Name:** Photo\_180708105933



**Photo Name:** Photo\_180708110004



Photo Name: Photo\_180708105941

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/8/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3081_18</u>	
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>3</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.890388</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PEM1C</u>	

Vegetation Type: Subarctic Sedge – Moss Wet Meadow (SSMWM)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: <u>Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				<b>Prevalence Index worksheet:</b> Total % Cover of: <u>      </u> Multiply by: <u>      </u> OBL species <u>35</u> x1= <u>35</u> FACW species <u>9</u> x2= <u>18</u> FAC species <u>14</u> x3= <u>42</u> FACU species <u>1</u> x4= <u>4</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>59</u> (A) <u>99</u> (B)  Prevalence Index = B/A= <u>1.68</u>
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix pulchra</u>	10	Yes	FAC	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>10</u>				
50% of total cover: <u>5</u>		20% of total cover: <u>2</u>		
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% X Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.   <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
1. <u>Eriophorum chamissonis s.l.</u>	20	Yes	OBL	
2. <u>Carex aquatilis</u>	15	Yes	OBL	
3. <u>Rubus chamaemorus</u>	5	No	FACW	
4. <u>Equisetum arvense</u>	2	No	FAC	
5. <u>Carex canescens</u>	2	No	FACW	
6. <u>Rumex arcticus</u>	2	No	FACW	
7. <u>Rhodiola integrifolia</u>	1	No	FAC	
8. <u>Rubus stellatus</u>	1	No	FAC	
9. <u>Trientalis europaea</u>	1	No	FACU	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>49</u>				
50% of total cover: <u>24.5</u>		20% of total cover: <u>9.8</u>		
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>O</u>				
% Cover of Wetland Bryophytes <u>75</u> % Cover of Bryophytes <u>95</u> (Where applicable)				
Remarks: <u>Small wetland poly. The rest of poly is upland.</u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oi
3-12							N/A		hor:Oe *2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/>	No
Depth (inches):	N/A				
Field Drainage Class:	VPD - Very Poorly Drained				

Remarks: Cobbles below organics, starting at 12". H2S at 5". \*2: With trace mineral. Cobble below organics.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):	2.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):	4.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):	0.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:



Photo Name: Photo\_180708122623



Photo Name: Photo\_180708122631



Photo Name: Photo\_180708122639



## Additional Reference Data: Photos

HDR3081\_18



Photo Name: Photo\_180708122647



Photo Name: Photo\_180708122610



Photo Name: Photo\_180708122618



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/8/2018  
 Applicant/Owner: PLP Sampling Point: HDR3082\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): Concave Slope(%): 4 HGM: N/A  
 Subregion (LRR): X Lat: 59.890236 Long: -155.394547 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra (DEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			
Remarks: <u>Near boundary. Paired plot with 3081. Wetter than normal antecedent precipitation</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Vaccinium uliginosum</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix pulchra</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACW species <u>4</u> x2= <u>8</u>
4. <u>Betula nana</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FAC species <u>163</u> x3= <u>489</u>
5. <u>Spiraea stevenii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	FACU species <u>7</u> x4= <u>28</u>
6. <u>Salix polaris</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	UPL species <u>3</u> x5= <u>15</u>
Total Cover: <u>146</u>				Column Totals: <u>177</u> (A) <u>540</u> (B)
50% of total cover: <u>73</u>				Prevalence Index = B/A= <u>3.05</u>
20% of total cover: <u>29.2</u>				
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Anemone narcissiflora</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	Prevalence Index is ≤3.0
3. <u>Sanguisorba canadensis</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Artemisia arctica</u>	<u>2</u>	<u>No</u>	<u>NL</u>	data in Remarks or on a separate sheet)
5. <u>Cornus suecica</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Angelica lucida</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
7. <u>Lupinus nootkatensis</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Hierochloa alpina</u>	<u>1</u>	<u>No</u>	<u>NL</u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>31</u>				
50% of total cover: <u>15.5</u>				
20% of total cover: <u>6.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>      </u>				<b>Hydrophytic Vegetation Present?</b>
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>20</u>				Yes <u>X</u> No <u>      </u>
(Where applicable)				

Remarks: In transition area next to wetland. Same swale, same elevation as last plot.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5									hor:Oe
5-16									hor:C *2
16-20	10YR2/2	100					No	Loam	hor:B 75% cobbles, 5%gravels.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):		Hydric Soil Present?	
Type: _____		Yes	No
Depth (inches): _____			X
Field Drainage Class: _____			

Remarks: While it is saturated now, it likely is not typically. C layer has organics, but less than 20%. Near boundary. \*2: 75% cobble 5% gravels. Organics with minerals in interstitial spaces.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Yes	No
Water Table Present?	Yes <input type="checkbox"/> X No <input type="checkbox"/>		X
Saturation Present?	Yes <input type="checkbox"/> X No <input type="checkbox"/>		
(includes capillary fringe)	Depth (inches): _____		
	Depth (inches): 16.0		
	Depth (inches): 13.0		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Very close to boundary. High antecedent precipitation and recent rain. No primary hydrology indicators observed.

Geomorphic Position: Concave slope.

## Additional Reference Data: Photos

HDR3082\_18



Photo Name: Photo\_180708125741



Photo Name: Photo\_180708125641



Photo Name: Photo\_180708125725



## Additional Reference Data: Photos

HDR3082\_18



**Photo Name:** Photo\_180708125623



**Photo Name:** Photo\_180708125616



**Photo Name:** Photo\_180708125631

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/8/2018  
 Applicant/Owner: PLP Sampling Point: HDR3083\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): Concave Slope(%): 1 HGM: Slope  
 Subregion (LRR): X Lat: 59.890877 Long: -155.395660 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1/EM1C

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Carex (DEST-C)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks: <u>Wetter than normal antecedent precipitation</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index worksheet:</b>
1. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Salix pulchra</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>27</u> x1= <u>27</u>
3. <u>Salix fuscescens</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	FACW species <u>20</u> x2= <u>40</u>
4. <u>Spiraea stevenii</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	FAC species <u>57</u> x3= <u>171</u>
5. <u>Andromeda polifolia</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	FACU species <u>3</u> x4= <u>12</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>40</u>				Column Totals: <u>107</u> (A) <u>250</u> (B)
50% of total cover: <u>20</u>				Prevalence Index = B/A= <u>2.34</u>
20% of total cover: <u>8</u>				
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Eriophorum angustifolium</u>	<u>25</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Calamagrostis canadensis</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex bigelowii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Equisetum arvense</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Rubus chamaemorus</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	
7. <u>Rhodiola integrifolia</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Carex macrochaeta</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	must be present, unless disturbed or problematic.
9. <u>Comarum palustre</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	
10. <u>Polemonium acutiflorum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>67</u>				
50% of total cover: <u>33.5</u>				
20% of total cover: <u>13.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>10</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>80</u>				<b>Present?</b>
(Where applicable)				
Remarks: <u>Could almost go with DEST-H. Small patches of SSMWM mixed in.</u>				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-8							N/A		hor:Oe
8-13	2.5Y4/2	90	7.5YR4/4	10	C	PL	No	Loam	hor:B
13-19	7.5YR4/3	100					No	Sandy Loam	hor:B With 50% cobble, 10% gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks: Would make AK redox w/2.5Y hue.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:					
Surface Water Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	6.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	0.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	0.0	
(includes capillary fringe)			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position: Concave, low angle, slope. Nearly flat.



Additional Reference Data: Overflow Vegetation

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Herb	Absolute % Cover	Dominant Species?	Indicator Status
Veratrum viride	1	No	FAC
Angelica lucida	1	No	FACU
Dryopteris expansa	1	No	FACU
Angelica genuflexa	1	No	FACW

Additional Reference Data: Photos

HDR3083\_18



Photo Name: Photo\_180708135549



Photo Name: Photo\_180708135608



## Additional Reference Data: Photos

HDR3083\_18



**Photo Name:** Photo\_180708135529



**Photo Name:** Photo\_180708135536



**Photo Name:** Photo\_180708135556



Photo Name: Photo\_180708135619



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/8/2018  
 Applicant/Owner: PLP Sampling Point: HDR3084\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): Convex Slope(%): 14 HGM: N/A  
 Subregion (LRR): X Lat: 59.890850 Long: -155.395416 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Bluejoint Herb (BH)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			
Remarks: <u>Wetter than normal antecedent precipitation</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>1</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>1</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>3</u> x2= <u>6</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>98</u> x3= <u>294</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>24</u> x4= <u>96</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>1</u> x5= <u>5</u>
Total Cover: <u>      </u>				Column Totals: <u>126</u> (A) <u>401</u> (B)
50% of total cover: <u>0</u>				Prevalence Index = B/A= <u>3.18</u>
20% of total cover: <u>0</u>				
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Geranium erianthum</u>	<u>12</u>	<u>No</u>	<u>FACU</u>	Prevalence Index is ≤3.0
3. <u>Veratrum viride</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Angelica lucida</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
5. <u>Empetrum nigrum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Rubus stellatus</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
7. <u>Anemone narcissiflora</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
8. <u>Chamaenerion angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
9. <u>Sanguisorba canadensis</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
10. <u>Festuca altaica</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>126</u>				
50% of total cover: <u>63</u>				
20% of total cover: <u>25.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				% Bare Ground <u>0</u>
% Cover of Wetland Bryophytes <u>0</u>				% Cover of Bryophytes <sup>5</sup> <u>      </u>
(Where applicable)				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				
Remarks:				
Total shrub cover is 4%. Because total shrub cover is less than 5%, it is included in herb stratum.				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-3							N/A		hor:Oe
3-20	10YR3/2	100					No	Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ <u>X</u>

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:					
Surface Water Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> X <input type="checkbox"/>	Depth (inches):		
Water Table Present?	Yes <input type="checkbox"/> X <input type="checkbox"/>	No <input type="checkbox"/>	Depth (inches):	17.0	
Saturation Present?	Yes <input type="checkbox"/> X <input type="checkbox"/>	No <input type="checkbox"/>	Depth (inches):	14.0	
(includes capillary fringe)			Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/> X <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed. Wetter than normal antecedent precipitation.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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Herb	Absolute % Cover	Dominant Species?	Indicator Status
Polemonium acutiflorum	1	No	FAC
Rhodiola integrifolia	1	No	FAC
Vaccinium vitis-idaea	1	No	FAC
Dryopteris expansa	1	No	FACU
Spiraea stevenii	1	No	FACU
Trientalis europaea	1	No	FACU
Viola lanqsdorffii	1	No	FACW
Artemisia arctica	1	No	NL

Additional Reference Data: Photos

HDR3084\_18



Photo Name: Photo\_180708142849



Photo Name: Photo\_180708142832



## Additional Reference Data: Photos

HDR3084\_18



Photo Name: Photo\_180708142826



Photo Name: Photo\_180708142936



Photo Name: Photo\_180708142913



**Photo Name:** Photo\_180708142856

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/8/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3086_18</u>	
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): <u>10</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.891460</u>	Long: <u>-155.396332</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: Many seeps through polygon. Map water as streams. Wetter than normal antecedent precipitation.	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Betula nana</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix reticulata</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACW species <u>7</u> x2= <u>14</u>
4. <u>Vaccinium vitis-idaea</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	FAC species <u>138</u> x3= <u>414</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>6</u> x4= <u>24</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>2</u> x5= <u>10</u>
Total Cover: <u>60</u>				Column Totals: <u>153</u> (A) <u>462</u> (B)
50% of total cover: <u>30</u>				<u>Prevalence Index = B/A=</u> <u>3.02</u>
20% of total cover: <u>12</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Petasites frigidus s.l.</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	Prevalence Index is ≤3.0
3. <u>Angelica lucida</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus stellatus</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Sanguisorba canadensis</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Aconitum delphinifolium</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Micranthes nelsoniana</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
8. <u>Polemonium acutiflorum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
9. <u>Rhodiola integrifolia</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Senecio lugens</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>93</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>46.5</u>				
20% of total cover: <u>18.6</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <sup>5</sup> <u>      </u>				
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-7	10YR3/2	100					No	Silt Loam	hor:A
7-16	10YR3/2	100					No	Loam	hor:B Pockets of fine sand.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: Cobble at 16"+. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Saturation Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
(includes capillary fringe)									
					<b>Wetland Hydrology Present?</b>	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Dry in pit. Multiple seeps through polygon. No primary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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Herb	Absolute % Cover	Dominant Species?	Indicator Status
Valeriana capitata	1	No	FAC
Dryopteris expansa	1	No	FACU
Mertensia paniculata	1	No	FACU
Trientalis europaea	1	No	FACU
Arnica lessingii	1	No	NL
Primula eximia	1	No	NL

Additional Reference Data: Photos

HDR3086\_18



Photo Name: Photo\_180708153022



Photo Name: Photo\_180708153039





**Photo Name:** Photo\_180708152946



**Photo Name:** Photo\_180708152939



**Photo Name:** Photo\_180708152933





Photo Name: Photo\_180708152956

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/9/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3087_18</u>	
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>7</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.891598</u>	Long: <u>-155.396606</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Dwarf Ericaceous Shrub Tundra (DEST)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: <u>Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Salix reticulata</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium uliginosum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>Betula nana</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FAC species <u>172</u> x3= <u>516</u>
5. <u>Vaccinium vitis-idaea</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>4</u> x4= <u>16</u>
6. <u>Dryas octopetala</u>	<u>1</u>	<u>No</u>	<u>NL</u>	UPL species <u>3</u> x5= <u>15</u>
Total Cover: <u>136</u>				Column Totals: <u>179</u> (A) <u>547</u> (B)
50% of total cover: <u>68</u>				<u>Prevalence Index = B/A=</u> <u>3.06</u>
20% of total cover: <u>27.2</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Festuca altaica</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Prevalence Index is ≤3.0
3. <u>Carex bigelowii</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Valeriana capitata</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Anemone narcissiflora</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Polemonium acutiflorum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Rhodiola integrifolia</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
8. <u>Stellaria longipes</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
9. <u>Angelica lucida</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
10. <u>Luzula multiflora</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>43</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>21.5</u>				
20% of total cover: <u>8.6</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>70</u>				
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oe
3-4									hor:Oa
4-19	10YR3/3	100					No	Silt Loam	hor:B *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):		Hydric Soil Present?	
Type: _____		Yes	No
Depth (inches): _____			X
Field Drainage Class: _____			

Remarks: Cobble at 18". \*3: Lots of organic staining. A seam of organics between 7 and 8".

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):	
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	16.0
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	7.0
(includes capillary fringe)			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
High antecedent precipitation. Lots of recent rainfall.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

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Herb	Absolute % Cover	Dominant Species?	Indicator Status
Arnica lessingii	1	No	NL
Artemisia arctica	1	No	NL

Additional Reference Data: Photos

HDR3087\_18

Photo Name: Photo\_180708160326



Photo Name: Photo\_180708160348







**Photo Name:** Photo\_180708160342



**Photo Name:** Photo\_180708160400



**Photo Name:** Photo\_180708160336



Photo Name: Photo\_180708160415



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/9/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3089_18</u>	
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): _____	Slope(%): <u>9</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.908413</u>	Long: <u>-155.384171</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
NW1 Classification: <u>U</u>		

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If No, explain in Remarks)

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b>  Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: <u>Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species
2. _____	_____	_____	_____	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. _____	_____	_____	_____	Total Number of Dominant
4. _____	_____	_____	_____	Species Across All Strata: <u>3</u> (B)
Total Cover: _____				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
Sapling/Shrub Stratum				Prevalence Index worksheet:
1. <u>Empetrum nigrum</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: _____ Multiply by: _____
2. <u>Vaccinium uliginosum</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	OBL species _____ x1= _____
3. <u>Betula nana</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	FACW species <u>1</u> x2= <u>2</u>
4. <u>Rhododendron tomentosum</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FAC species <u>158</u> x3= <u>474</u>
5. <u>Vaccinium vitis-idaea</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FACU species <u>2</u> x4= <u>8</u>
6. <u>Salix pulchra</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	UPL species _____ x5= _____
Total Cover: <u>145</u>				Column Totals: <u>161</u> (A) <u>484</u> (B)
50% of total cover: <u>72.5</u>				Prevalence Index = B/A= <u>3.01</u>
20% of total cover: <u>29</u>				
Herb Stratum				Hydrophytic Vegetation Indicators:
1. <u>Carex bigelowii</u>	<u>12</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Cornus suecica</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Polygonum bistorta ssp. plumosum</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
5. <u>Pedicularis labradorica</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>16</u>				
50% of total cover: <u>8</u>				
20% of total cover: <u>3.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>5</u>				
% Cover of Bryophytes <u>50</u>				
(Where applicable)				
Hydrophytic Vegetation Present? Yes <u>X</u> No _____				
Remarks: _____				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-5							N/A		hor:Oe
5-7	10YR2/1	100					No	Loam	hor:A 20% stone, 40% gravel.
7-24	10YR3/4	100					No	Sandy Loam	hor:B 20% stone, 40% gravel.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input checked="" type="checkbox"/> X No <input type="checkbox"/> Depth (inches): 17.0	
(includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No water table observed. No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3089\_18

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Arctostaphylos alpina	1	No	FAC
Spiraea stevenii	1	No	FACU

Additional Reference Data: Photos

HDR3089\_18



Photo Name: Photo\_180709082426



Photo Name: Photo\_180709082214



## Additional Reference Data: Photos

HDR3089\_18



Photo Name: Photo\_180709082226



Photo Name: Photo\_180709082235



Photo Name: Photo\_180709082202



**Photo Name:** Photo\_180709082155

Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	7/9/2018
Applicant/Owner:	PLP			Sampling Point:	HDR3090_18
Investigators:	MS AH	Landform (hillslope, terrace, etc.):	Hillslope		
Local Relief (concave, convex, none):	Concave	Slope(%):	8	HGM:	Slope
Subregion (LRR):	X	Lat:	59.908447	Long:	-155.384354
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	PSS1/EM1B		



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-9									hor:Oe
9-16	2.5Y3/2	90	7.5YR4/6	10	C	PL	No	Sandy Loam	hor:B 40% large subangular gravel.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:			Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks: 16"+ cobble.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	1.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	2.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	0.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Pedicularis langsdorfii	1	No	FACW
Pedicularis sudetica	1	No	FACW

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/9/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3092_18</u>	
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>9</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.911350</u>	Long: <u>-155.387894</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Closed Alder – Willow Tall Shrub (CAWTS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: Walked entire poly. Pit dug in wettest part. Wetter than normal antecedent precipitation	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<b>Prevalence Index worksheet:</b> <u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u> OBL species <u>      </u> x1= <u>      </u> FACW species <u>14</u> x2= <u>28</u> FAC species <u>132</u> x3= <u>396</u> FACU species <u>10</u> x4= <u>40</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>156</u> (A) <u>464</u> (B)  <i>Prevalence Index = B/A=</i> <u>2.97</u>
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
Sapling/Shrub Stratum				
1. <u>Salix pulchra</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>X</u> Dominance Test is >50% <u>X</u> Prevalence Index is ≤3.0 <u>      </u> Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Alnus sinuata</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>90</u>				
50% of total cover: <u>45</u>		20% of total cover: <u>18</u>		
Herb Stratum				
1. <u>Calamagrostis canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic</b> <b>Vegetation</b> Yes <u>X</u> No <u>      </u> <b>Present?</b>
2. <u>Equisetum sylvaticum</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Sanguisorba canadensis</u>	<u>7</u>	<u>Yes</u>	<u>FACW</u>	
4. <u>Senecio triangularis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
5. <u>Veratrum viride</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	
6. <u>Rhodiola integrifolia</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
7. <u>Chamaenerion angustifolium</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
8. <u>Anemone richardsonii</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
9. <u>Dryopteris expansa</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
10. <u>Streptopus amplexifolius</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>66</u>				
50% of total cover: <u>33</u>		20% of total cover: <u>13.2</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>20</u>		
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>50</u>		
(Where applicable)				

Remarks:

This point is dominated by willow. Entire polygon is both willow and alder. Alder areas are drier than willow areas.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oe
3-8	10YR2/1	100					N/A	Loam	hor:A High organic content.
8-14	10YR2/2	100					No	Loam	hor:B
14-20	10YR4/4	100					No	Sandy Loam	hor:B/C 60% coarse gravel.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: MWD - Moderately Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 0.5	
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 3.0	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 0.0	
(includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Lots of recent heavy rain. High antecedent precipitation.

Geomorphic Position:

## Additional Reference Data: Overflow Vegetation

HDR3092\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Pyrola minor	1	No	FAC
Rubus arcticus s.l.	1	No	FAC
Valeriana capitata	1	No	FAC
Angelica lucida	1	No	FACU
Geranium erianthum	1	No	FACU
Trientalis europaea	1	No	FACU
Petasites frigidus s.l.	1	No	FACW
Viola lanqsdorffii	1	No	FACW

## Additional Reference Data: Photos

HDR3092\_18



Photo Name: Photo\_180709102123



Photo Name: Photo\_180709102235

## Additional Reference Data: Photos

HDR3092\_18



**Photo Name:** Photo\_180709102206



**Photo Name:** Photo\_180709102116



**Photo Name:** Photo\_180709102103





**Photo Name:** Photo\_180709102130

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/9/2018  
 Applicant/Owner: PLP Sampling Point: HDR3093\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 8 HGM: Slope  
 Subregion (LRR): X Lat: 59.910584 Long: -155.387924 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1/EM1B

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks: <u>Wetter than normal antecedent precipitation</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)	
Total Cover: <u>      </u>				Percent of Dominant Species	
50% of total cover: <u>0</u>			20% of total cover: <u>0</u>	That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index worksheet:</b>	
1. <u>Salix pulchra</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by: <u>      </u>	
2. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>51</u> x1= <u>51</u>	
3. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>12</u> x2= <u>24</u>	
4. <u>Empetrum nigrum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>91</u> x3= <u>273</u>	
5. <u>Spiraea stevenii</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	FACU species <u>7</u> x4= <u>28</u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>	
Total Cover: <u>56</u>				Column Totals: <u>161</u> (A) <u>376</u> (B)	
50% of total cover: <u>28</u>			20% of total cover: <u>11.2</u>	<i>Prevalence Index = B/A=</i> <u>2.34</u>	
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>	
1. <u>Carex pluriflora</u>	<u>39</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Dominance Test is >50%	
2. <u>Equisetum arvense</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0	
3. <u>Rubus chamaemorus</u>	<u>8</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide	
4. <u>Comarum palustre</u>	<u>7</u>	<u>No</u>	<u>OBL</u>	data in Remarks or on a separate sheet)	
5. <u>Calamagrostis canadensis</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
6. <u>Carex bigelowii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
7. <u>Eriophorum angustifolium</u>	<u>5</u>	<u>No</u>	<u>OBL</u>		
8. <u>Cornus suecica</u>	<u>2</u>	<u>No</u>	<u>FAC</u>		
9. <u>Petasites frigidus s.l.</u>	<u>2</u>	<u>No</u>	<u>FACW</u>		
10. <u>Sanguisorba canadensis</u>	<u>2</u>	<u>No</u>	<u>FACW</u>		
Total Cover: <u>105</u>				<b>Hydrophytic</b>	
50% of total cover: <u>52.5</u>			20% of total cover: <u>21</u>	<b>Vegetation</b>	
Plot size (radius, or length x width) <u>1/10 acre</u>			% Bare Ground <u>0</u>	Yes <u>X</u> No <u>      </u>	
% Cover of Wetland Bryophytes <u>35</u>			% Cover of Bryophytes <u>80</u>	<b>Present?</b>	
(Where applicable)					
Remarks: <u>Transition between DEST-H and CWTS.</u>					

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-5							N/A		hor:Oe
5-6							N/A	Sand	hor:C
6-16	10YR3/1	100					Yes	Loam	hor:A *4
16-20	10YR3/4	100					No	Sandy Loam	hor:B Gravel 5%.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				
			</		

Remarks: 20"+ gravel and cobble. H2S at 5". \*4: High amount of organic staining. Picture of alpha alpha reaction.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:					
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	2.0		
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	0.0		
(includes capillary fringe)			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR3093\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Pyrola minor	1	No	FAC
Rhodiola integrifolia	1	No	FAC
Rubus arcticus s.l.	1	No	FAC
Veratrum viride	1	No	FAC
Chamaenerion angustifolium	1	No	FACU
Dryopteris expansa	1	No	FACU
Lupinus nootkatensis	1	No	FACU
Lycopodium annotinum s.l.	1	No	FACU
Streptopus amplexifolius	1	No	FACU
Trientalis europaea	1	No	FACU

Additional Reference Data: Photos

HDR3093\_18



Photo Name: Photo\_180709120816



Photo Name: Photo\_180709120752



**Photo Name:** Photo\_180709120758



**Photo Name:** Photo\_180709120731



**Photo Name:** Photo\_180709121013





Photo Name: Photo\_180709120745



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/9/2018  
 Applicant/Owner: PLP Sampling Point: HDR3094\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 15 HGM: N/A  
 Subregion (LRR): X Lat: 59.910320 Long: -155.388702 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Bluejoint Herb (BH)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	
Remarks: <u>Wetter than normal antecedent precipitation</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Vaccinium uliginosum</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Empetrum nigrum</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FACW species <u>54</u> x2= <u>108</u>
4. <u>Spiraea stevenii</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	FAC species <u>84</u> x3= <u>252</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>32</u> x4= <u>128</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>1</u> x5= <u>5</u>
Total Cover: <u>16</u>				Column Totals: <u>171</u> (A) <u>493</u> (B)
50% of total cover: <u>8</u>				Prevalence Index = B/A= <u>2.88</u>
20% of total cover: <u>3.2</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Sanguisorba canadensis</u>	<u>50</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	<u>25</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Chamaenerion angustifolium</u>	<u>20</u>	<u>No</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
5. <u>Geranium erianthum</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Anemone richardsonii</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
7. <u>Dryopteris expansa</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Viola langsdoeffii</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	must be present, unless disturbed or problematic.
9. <u>Luzula parviflora</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Pyrola minor</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>155</u>				
50% of total cover: <u>77.5</u>				
20% of total cover: <u>31</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <sup>5</sup> <u>      </u>				
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A		hor:Oe
4-5							N/A		hor:Oa
5-10	10YR2/2	100					No	Loam	hor:A
10-22	7.5YR2.5/2	100					No	Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 10.0	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 5.0	
(includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Steep slope drains rapidly.

Geomorphic Position:

## Additional Reference Data: Overflow Vegetation

HDR3094\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Rhodiola integrifolia	1	No	FAC
Veratrum viride	1	No	FAC
Angelica lucida	1	No	FACU
Lupinus nootkatensis	1	No	FACU
Lycopodium annotinum s.l.	1	No	FACU
Thelypteris phegopteris	1	No	FACU
Petasites frigidus s.l.	1	No	FACW
Rubus chamaemorus	1	No	FACW
Minuartia arctica	1	No	NL

## Additional Reference Data: Photos

HDR3094\_18



Photo Name: Photo\_180709130720



Photo Name: Photo\_180709130815



## Additional Reference Data: Photos

HDR3094\_18



Photo Name: Photo\_180709130735



Photo Name: Photo\_180709130730



Photo Name: Photo\_180709130709

## Additional Reference Data: Photos

HDR3094\_18

Photo Name: Photo\_180709130800



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/9/2018  
 Applicant/Owner: PLP Sampling Point: HDR3098\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 3 HGM: Slope  
 Subregion (LRR): X Lat: 59.910427 Long: -155.394379 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1C

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index worksheet:</b>				
Total % Cover of: <u>      </u> Multiply by: <u>      </u>				
OBL species <u>1</u> x1= <u>1</u>				
FACW species <u>24</u> x2= <u>48</u>				
FAC species <u>127</u> x3= <u>381</u>				
FACU species <u>10</u> x4= <u>40</u>				
UPL species <u>      </u> x5= <u>      </u>				
Column Totals: <u>162</u> (A) <u>470</u> (B)				
Prevalence Index = B/A= <u>2.90</u>				
<b>Hydrophytic Vegetation Indicators:</b>				
X Dominance Test is >50%				
X Prevalence Index is ≤3.0				
Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)				
Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix pulchra</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Spiraea stevenii</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>81</u>				
50% of total cover: <u>40.5</u>				
20% of total cover: <u>16.2</u>				

Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Calamagrostis canadensis</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Sanguisorba canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Equisetum arvense</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	
4. <u>Anemone richardsonii</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
5. <u>Chamaenerion angustifolium</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
6. <u>Streptopus amplexifolius</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
7. <u>Rubus chamaemorus</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
8. <u>Rumex arcticus</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
9. <u>Micranthes nelsoniana</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Polemonium acutiflorum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>81</u>				
50% of total cover: <u>40.5</u>				
20% of total cover: <u>16.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				% Bare Ground <u>0</u>
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>50</u>		
(Where applicable)				

Remarks: Multiple streams running through. 7' tall willow average.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-8							N/A		hor:Oe
8-12	10YR3/1	100					No	Loam	hor:A
12-19	7.5YR2.5/2	100					No	Sandy Loam	hor:B
19-22	7.5YR3/4	98					No	Loamy Sand	hor:B/C
19-22	2.5YR2.5/3	2					No	Loamy Sand	hor:B/C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks: Dug multiple pits. All had a minimum of 8" organics.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	4.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	2.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	0.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Multiple streams running through area. Wetland above and below polygon. Pockets of water throughout 2%.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3098\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Pyrola minor	1	No	FAC
Veratrum viride	1	No	FAC
Angelica lucida	1	No	FACU
Geranium erianthum	1	No	FACU
Listera cordata	1	No	FACU
Trientalis europaea	1	No	FACU
Comarum palustre	1	No	OBL

Additional Reference Data: Photos

HDR3098\_18



Photo Name: Photo\_180709145516



Photo Name: Photo\_180709145459

## Additional Reference Data: Photos

HDR3098\_18



Photo Name: Photo\_180709145635



Photo Name: Photo\_180709145648



Photo Name: Photo\_180709145523



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/9/2018  
 Applicant/Owner: PLP Sampling Point: HDR3101\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 3 HGM: N/A  
 Subregion (LRR): X Lat: 59.909111 Long: -155.396683 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Alder – Willow Tall Shrub (CAWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
Total Cover: <u>      </u>				<b>Prevalence Index worksheet:</b>
50% of total cover: <u>0</u>				
20% of total cover: <u>0</u>				
<b>Sapling/Shrub Stratum</b>				Total % Cover of: <u>      </u> Multiply by: <u>      </u>
1. <u>Alnus sinuata</u>	90	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
2. <u>Salix pulchra</u>	10	No	FAC	FACW species <u>9</u> x2= <u>18</u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>118</u> x3= <u>354</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>29</u> x4= <u>116</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>156</u> (A) <u>488</u> (B)
Total Cover: <u>100</u>				Prevalence Index = B/A= <u>3.13</u>
50% of total cover: <u>50</u>				
20% of total cover: <u>20</u>				
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Dryopteris expansa</u>	20	Yes	FACU	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	12	Yes	FAC	Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	5	No	FAC	Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)
4. <u>Viola langsдорffii</u>	5	No	FACW	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>Streptopus amplexifolius</u>	3	No	FACU	
6. <u>Angelica lucida</u>	2	No	FACU	
7. <u>Thelypteris phegopteris</u>	2	No	FACU	
8. <u>Sanguisorba canadensis</u>	2	No	FACW	
9. <u>Senecio triangularis</u>	2	No	FACW	
10. <u>Aconitum delphinifolium</u>	1	No	FAC	
Total Cover: <u>56</u>				
50% of total cover: <u>28</u>				
20% of total cover: <u>11.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>30</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>25</u>				
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-6							N/A		hor:Oe
6-19	7.5YR2.5/3	100					No	Sandy Loam	hor:A Some organic staining 5%.
19-22	7.5YR4/4	100					No	Loamy Sand	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	MWD - Moderately Well Drained		

Remarks: Pit dug in low swale. The rest of area is drier. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):			
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):			
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Recent heavy rainfall. High antecedent precipitation.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3101\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Listera cordata	1	No	FACU
Trientalis europaea	1	No	FACU

Additional Reference Data: Photos

HDR3101\_18



Photo Name: Photo\_180709155937



Photo Name: Photo\_180709155952



## Additional Reference Data: Photos

HDR3101\_18



Photo Name: Photo\_180709160000



Photo Name: Photo\_180709155930



Photo Name: Photo\_180709160026



Photo Name: Photo\_180709160040

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/10/2018  
 Applicant/Owner: PLP Sampling Point: HDR3102\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): Concave Slope(%): 3 HGM: Slope  
 Subregion (LRR): X Lat: 59.909084 Long: -155.408813 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS3B

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			

Remarks: Transitional area between wetland and upland. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Empetrum nigrum</u>	85	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Vaccinium uliginosum</u>	25	No	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Betula nana</u>	10	No	FAC	FACW species <u>2</u> x2= <u>4</u>
4. <u>Salix pulchra</u>	6	No	FAC	FAC species <u>150</u> x3= <u>450</u>
5. <u>Rhododendron tomentosum</u>	5	No	FAC	FACU species <u>3</u> x4= <u>12</u>
6. <u>Vaccinium vitis-idaea</u>	2	No	FAC	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>134</u>				Column Totals: <u>155</u> (A) <u>466</u> (B)
50% of total cover: <u>67</u>				<u>Prevalence Index = B/A=</u> <u>3.01</u>
20% of total cover: <u>26.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	12	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Carex microchaeta</u>	3	No	FAC	Prevalence Index is ≤3.0
3. <u>Cornus suecica</u>	1	No	FAC	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Equisetum arvense</u>	1	No	FAC	data in Remarks or on a separate sheet)
5. <u>Lupinus nootkatensis</u>	1	No	FACU	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Lycopodium annotinum s.l.</u>	1	No	FACU	
7. <u>Petasites frigidus s.l.</u>	1	No	FACW	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Rubus chamaemorus</u>	1	No	FACW	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>21</u>				
50% of total cover: <u>10.5</u>				
20% of total cover: <u>4.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>10</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>40</u>				<b>Present?</b>
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-7							N/A		hor:Oe
7-8							N/A		hor:Oa
8-20	2.5Y4/3	100					No	Loam	hor:B *4

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydic Soil Indicators:			Indicators for Problematic Hydic Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydic Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	SPD - Somewhat Poorly Drained				

Remarks: Histic epipedon over bright soil. \*4: 40% coarse subangular and rounded gravel.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	1.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	6.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	0.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position: Toeslope.

Additional Reference Data: Overflow Vegetation

HDR3102\_18

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Spiraea stevenii</u>	<u>1</u>	<u>No</u>	<u>FACU</u>

Additional Reference Data: Photos

HDR3102\_18

Photo Name: Photo\_180710085424



Photo Name: Photo\_180710085448





## Additional Reference Data: Photos

HDR3102\_18



Photo Name: Photo\_180710085603



Photo Name: Photo\_180710085533



Photo Name: Photo\_180710085441



Photo Name: Photo\_180710085433



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/10/2018  
 Applicant/Owner: PLP Sampling Point: HDR3103\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 10 HGM: N/A  
 Subregion (LRR): X Lat: 59.908924 Long: -155.407288 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Empetrum nigrum</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>8</u> x2= <u>16</u>
3. <u>Salix pulchra</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FAC species <u>137</u> x3= <u>411</u>
4. <u>Spiraea stevenii</u>	<u>8</u>	<u>No</u>	<u>FACU</u>	FACU species <u>18</u> x4= <u>72</u>
5. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	UPL species <u>1</u> x5= <u>5</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>164</u> (A) <u>504</u> (B)
Total Cover: <u>93</u>				<u>Prevalence Index = B/A=</u> <u>3.07</u>
50% of total cover: <u>46.5</u>				
20% of total cover: <u>18.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	Prevalence Index is ≤3.0
3. <u>Carex microchaeta</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Chamaenerion angustifolium</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
5. <u>Geranium erianthum</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Carex podocarpa</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
7. <u>Cornus suecica</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Rhodiola integrifolia</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Rubus chamaemorus</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
10. <u>Equisetum sylvaticum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>71</u>				
50% of total cover: <u>35.5</u>				
20% of total cover: <u>14.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>10</u>				<b>Present?</b>
(Where applicable)				

Remarks:

Polygon is the steep slope going to the wetland. Composed of CWLS, OWLS, and DEST-H, all uplands.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oe
3-5							N/A		hor:Oa
5-8	7.5YR2.5/2	100					No	Loam	hor:A With some organic staining.
8-20	7.5YR2.5/2	100					No	Sandy Loam	hor:B *4

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: No hydric soil indicators observed. \*4: 50% rounded medium and coarse gravels.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No saturation, no water table. No primary or secondary hydrology indicators observed.

Geomorphic Position: Steep slope.



Additional Reference Data: Overflow Vegetation

HDR3103\_18

	Absolute % Cover	Dominant Species?	Indicator Status
Herb			
Veratrum viride	1	No	FAC
Dryopteris expansa	1	No	FACU
Gymnocarpium dryopteris	1	No	FACU
Lupinus nootkatensis	1	No	FACU
Trientalis europaea	1	No	FACU
Viola langsdorffii	1	No	FACW
Artemisia arctica	1	No	NL

Additional Reference Data: Photos

HDR3103\_18



Photo Name: Photo\_180710094105



Photo Name: Photo\_180710094015





Photo Name: Photo\_180710094036



Photo Name: Photo\_180710094027



Photo Name: Photo\_180710094048

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/10/2018  
 Applicant/Owner: PLP Sampling Point: HDR3104\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 3 HGM: N/A  
 Subregion (LRR): X Lat: 59.910004 Long: -155.411118 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks: Walked entire polygon. All upland. Patches of BH mixed in on some of the steeper slopes. Wetter than normal antecedent precipitation.					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Empetrum nigrum</u>	85	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Vaccinium uliginosum</u>	55	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Betula nana</u>	10	No	FAC	FACW species <u>3</u> x2= <u>6</u>
4. <u>Rhododendron tomentosum</u>	7	No	FAC	FAC species <u>199</u> x3= <u>597</u>
5. <u>Salix pulchra</u>	5	No	FAC	FACU species <u>4</u> x4= <u>16</u>
6. <u>Vaccinium vitis-idaea</u>	5	No	FAC	UPL species <u>1</u> x5= <u>5</u>
Total Cover: <u>173</u>				Column Totals: <u>207</u> (A) <u>624</u> (B)
50% of total cover: <u>86.5</u>				<u>Prevalence Index = B/A=</u> <u>3.01</u>
20% of total cover: <u>34.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	20	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	3	No	FAC	<u>      </u> Prevalence Index is ≤3.0
3. <u>Calamagrostis canadensis</u>	2	No	FAC	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex podocarpa</u>	2	No	FAC	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Cornus suecica</u>	1	No	FAC	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Rhodiola integrifolia</u>	1	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Dryopteris expansa</u>	1	No	FACU	
8. <u>Lycopodium annotinum s.l.</u>	1	No	FACU	
9. <u>Rubus chamaemorus</u>	1	No	FACW	
10. <u>Sanguisorba canadensis</u>	1	No	FACW	
Total Cover: <u>34</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>17</u>				
20% of total cover: <u>6.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>1</u>		% Cover of Bryophytes <u>10</u>		
(Where applicable)				
Remarks: Pockets of small BH mixed within poly.				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-4							N/A		hor:Oe Trace mineral.
4-5							N/A	Sand	hor:C Brown.
5-20	10YR4/3	100					No		hor:B *4

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>		
Field Drainage Class:	MWD - Moderately Well Drained				

Remarks: All other parts of polygon are drier and steeper. No hydric soil indicators observed. \*4: 50% medium and course rounded gravel.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>					
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	13.0		
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	12.0		
(includes capillary fringe)			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Wetter than normal antecedent precipitation.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3104\_18

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
Arnica lessingii	1	No	NL
<b>Sapling/Shrub</b>			
Salix arctica	3	No	FAC
Spiraea stevenii	2	No	FACU
Andromeda polifolia	1	No	FACW

Additional Reference Data: Photos

HDR3104\_18



Photo Name: Photo\_180710104348



Photo Name: Photo\_180710104355





Photo Name: Photo\_180710104339



Photo Name: Photo\_180710104333



Photo Name: Photo\_180710104455





Photo Name: Photo\_180710104410

Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	7/10/2018
Applicant/Owner:	PLP			Sampling Point:	HDR3105_18
Investigators:	MS AH	Landform (hillslope, terrace, etc.):	Hillslope		
Local Relief (concave, convex, none):	None	Slope(%):	6	HGM:	N/A
Subregion (LRR):	X	Lat:	59.906532	Long:	-155.410751
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
Total Cover:				
50% of total cover:		0	20% of total cover:	0
Sapling/Shrub Stratum				
1.	Salix pulchra	85	Yes	FAC
2.	Spiraea stevenii	2	No	FACU
3.				
4.				
5.				
6.				
Total Cover:		87		
50% of total cover:		43.5	20% of total cover:	17.4
Herb Stratum				
1.	Calamagrostis canadensis	50	Yes	FAC
2.	Dryopteris expansa	20	Yes	FACU
3.	Veratrum viride	7	No	FAC
4.	Equisetum arvense	5	No	FAC
5.	Geranium erianthum	5	No	FACU
6.	Sanguisorba canadensis	5	No	FACW
7.	Chamaenerion angustifolium	2	No	FACU
8.	Gymnocarpium dryopteris	2	No	FACU
9.	Streptopus amplexifolius	2	No	FACU
10.	Aconitum delphiniifolium	1	No	FAC
Total Cover:		104		
50% of total cover:		52	20% of total cover:	20.8
Plot size (radius, or length x width)		1/10 acre	% Bare Ground	0
% Cover of Wetland Bryophytes		0	% Cover of Bryophytes	10
(Where applicable)				

### Dominance Test Worksheet:

Number of Dominant Species

That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

### Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x1=
FACW species	6 x2= 12
FAC species	151 x3= 453
FACU species	34 x4= 136
UPL species	x5=
Column Totals:	191 (A) 601 (B)

Prevalence Index = B/A= 3.15

### Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is ≤3.0

Morphological Adaptations<sup>1</sup> (Provide data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

### Hydrophytic Vegetation Present?

Yes X No

Remarks:
----------

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-4							N/A		hor:Oe
4-12	7.5YR3/1	100					No	Silt Loam	hor:A *3
12-20	10YR3/2	100					No	Loam	hor:B *4

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: MWD - Moderately Well Drained	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: 20"+ cobble/stone. No hydric soil indicators observed. \*3: High amount of organic staining. \*4: High organic matter content. 40% rounded coarse gravel.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 19.0	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 18.0	
(includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Stream running through poly. No primary hydrology indicators observed.

Geomorphic Position: Plot located within a minor drainage.



Additional Reference Data: Overflow Vegetation

HDR3105\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Anemone richardsonii	1	No	FAC
Micranthes nelsoniana	1	No	FAC
Rubus stellatus	1	No	FAC
Trientalis europaea	1	No	FACU
Viola lanqsdorffii	1	No	FACW

Additional Reference Data: Photos

HDR3105\_18



Photo Name: Photo\_180710113622



Photo Name: Photo\_180710113723



**Photo Name:** Photo\_180710113629



**Photo Name:** Photo\_180710113742



**Photo Name:** Photo\_180710113613





**Photo Name:** Photo\_180710113636



Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	7/10/2018
Applicant/Owner:	PLP			Sampling Point:	HDR3108_18
Investigators:	MS AH	Landform (hillslope, terrace, etc.):	Hillslope		
Local Relief (concave, convex, none):	None	Slope(%):	6	HGM:	Slope
Subregion (LRR):	X	Lat:	59.907227	Long:	-155.413193
		Datum:	WGS84		
Soil Map Unit Name:	N/A	NWI Classification:	PSS1B		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      X      </u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			

Tree Stratum				Dominance Test Worksheet:			
Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Number of Dominant Species That Are OBL, FACW, or FAC:		
1.					6 (A)		
2.					Total Number of Dominant Species Across All Strata:		
3.					6 (B)		
4.					Percent of Dominant Species That Are OBL, FACW, or FAC:		
Total Cover:					100 (A/B)		
50% of total cover:		0	20% of total cover:		0		
Sapling/Shrub Stratum				Prevalence Index worksheet:			
Sapling/Shrub Stratum					Total % Cover of: Multiply by:		
1.	Salix pulchra	75	Yes	FAC	OBL species	7	x1= 7
2.	Vaccinium uliginosum	25	Yes	FAC	FACW species	13	x2= 26
3.	Empetrum nigrum	5	No	FAC	FAC species	138	x3= 414
4.	Spiraea stevenii	5	No	FACU	FACU species	9	x4= 36
5.	Vaccinium vitis-idaea	1	No	FAC	UPL species		x5=
6.					Column Totals:	167 (A)	483 (B)
Total Cover:		111			Prevalence Index = B/A= 2.89		
50% of total cover:		55.5	20% of total cover:		22.2		
Herb Stratum				Hydrophytic Vegetation Indicators:			
Herb Stratum					X Dominance Test is >50%		
1.	Equisetum arvense	15	Yes	FAC	X Prevalence Index is ≤3.0		
2.	Rubus chamaemorus	8	Yes	FACW	Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)		
3.	Calamagrostis canadensis	7	Yes	FAC	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)		
4.	Comarum palustre	7	Yes	OBL	*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.		
5.	Sanguisorba canadensis	3	No	FACW			
6.	Anemone richardsonii	2	No	FAC			
7.	Pyrola minor	2	No	FAC			
8.	Rubus stellatus	2	No	FAC	Hydrophytic Vegetation Present? Yes X No		
9.	Chamaenerion angustifolium	2	No	FACU			
10.	Geranium erianthum	2	No	FACU			
Total Cover:		56					
50% of total cover:		28	20% of total cover:		11.2		
Plot size (radius, or length x width) 1/10 acre				% Bare Ground			
% Cover of Wetland Bryophytes 20		% Cover of Bryophytes 80					
(Where applicable)							

Remarks:
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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-8							N/A		hor:Oe
8-15							N/A		hor:Oa
15-17	5Y3/1	100					Yes	Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydic Soil Indicators:			Indicators for Problematic Hydic Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A		<b>Hydic Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Field Drainage Class:	PD - Poorly Drained				

Remarks: Starting at 12"+ 95% coarse gravels and stones.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>					
Surface Water Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):	1.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):	4.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):	0.0	
(includes capillary fringe)			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position: Toeslope.

Additional Reference Data: Overflow Vegetation

HDR3108\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Cornus suecica	1	No	FAC
Polemonium acutiflorum	1	No	FAC
Rhodiola integrifolia	1	No	FAC
Stellaria longipes	1	No	FAC
Equisetum variegatum	1	No	FACW
Pedicularis sudetica	1	No	FACW

Additional Reference Data: Photos

HDR3108\_18



Photo Name: Photo\_180710130424



Photo Name: Photo\_180710130434



## Additional Reference Data: Photos

HDR3108\_18



Photo Name: Photo\_180710130447



Photo Name: Photo\_180710130521



Photo Name: Photo\_180710130507



Photo Name: Photo\_180710130440

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/10/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3109_18</u>	
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>15</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.907253</u>	Long: <u>-155.413086</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: Entire steep hillside is upland. Mostly BH (outside of poly to the north). Very close to boundary. Paired plot with 3108. Wetter than normal antecedent precipitation.	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Spiraea stevenii</u>	<u>13</u>	<u>No</u>	<u>FACU</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Empetrum nigrum</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	FACW species <u>52</u> x2= <u>104</u>
4. <u>Vaccinium uliginosum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FAC species <u>201</u> x3= <u>603</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>51</u> x4= <u>204</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>84</u>				Column Totals: <u>304</u> (A) <u>911</u> (B)
50% of total cover: <u>42</u>				Prevalence Index = B/A= <u>3.00</u>
20% of total cover: <u>16.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>50</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	<u>35</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Chamaenerion angustifolium</u>	<u>30</u>	<u>No</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
5. <u>Anemone richardsonii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Carex bigelowii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Carex podocarpa</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
8. <u>Geranium erianthum</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
9. <u>Cornus suecica</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
10. <u>Pyrola minor</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>220</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>110</u>				
20% of total cover: <u>44</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>20</u>				
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-4							N/A		hor:Oe
4-7	10YR2/1	100					No	Loam	hor:A
7-10							N/A		hor:Oa Buried.
10-22	10YR2/2	100					Yes	Loamy Coarse	hor:B Positive alpha alpha at 11".

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	No	X
Depth (inches):	N/A				
Field Drainage Class:	MWD - Moderately Well Drained				

Remarks: 80% coarse gravel and cobble throughout entire pit. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	Yes	X	No
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):			
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):			
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Heavy recent rainfall. High antecedent precipitation.

Geomorphic Position: Hillside.

Additional Reference Data: Overflow Vegetation

HDR3109\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Aconitum delphiniifolium	1	No	FAC
Luzula parviflora	1	No	FAC
Micranthes nelsoniana	1	No	FAC
Rhodiola integrifolia	1	No	FAC
Rubus stellatus	1	No	FAC
Stellaria longipes	1	No	FAC
Dryopteris expansa	1	No	FACU
Streptopus amplexifolius	1	No	FACU
Trientalis europaea	1	No	FACU
Petasites frigidus s.l.	1	No	FACW
Rubus chamaemorus	1	No	FACW

Additional Reference Data: Photos

HDR3109\_18



Photo Name: Photo\_180710141742



Photo Name: Photo\_180710141813





Photo Name: Photo\_180710141727



Photo Name: Photo\_180710141734



Photo Name: Photo\_180710141834





Photo Name: Photo\_180710141749

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/10/2018  
 Applicant/Owner: PLP Sampling Point: HDR3111\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 13 HGM: Slope  
 Subregion (LRR): X Lat: 59.907555 Long: -155.414413 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil X or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>18</u> x2= <u>36</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>159</u> x3= <u>477</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>19</u> x4= <u>76</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>80</u>				Column Totals: <u>196</u> (A) <u>589</u> (B)
50% of total cover: <u>40</u>				Prevalence Index = B/A= <u>3.01</u>
20% of total cover: <u>16</u>				
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Sanguisorba canadensis</u>	<u>15</u>	<u>No</u>	<u>FACW</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Angelica lucida</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
5. <u>Chamaenerion angustifolium</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Geranium erianthum</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
7. <u>Anemone richardsonii</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Viola langsдорffii</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	must be present, unless disturbed or problematic.
9. <u>Rhodiola integrifolia</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
10. <u>Rubus arcticus s.l.</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>116</u>				
50% of total cover: <u>58</u>				
20% of total cover: <u>23.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic Vegetation Present?</b>
% Bare Ground <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>50</u>		
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oe
2-6	7.5 YR 4/2	100					No	Silt Loam	hor:A
6-18	2.5 Y 4/2	90	7.5 YR 4/4	10	C	PL	No	Silt Loam	hor:B Coarse gravel throughout.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input checked="" type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	SPD - Somewhat Poorly Drained		
		<b>Hydric Soil Present?</b>	Yes <u>  X  </u> No <u>      </u>

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<u>      </u>	No	<u>  X  </u>	Depth (inches):	<u>                    </u>			
Water Table Present?	Yes	<u>  X  </u>	No	<u>      </u>	Depth (inches):	<u>      11.0      </u>			
Saturation Present?	Yes	<u>  X  </u>	No	<u>      </u>	Depth (inches):	<u>      10.0      </u>	<b>Wetland Hydrology Present?</b> Yes <u>  X  </u> No <u>      </u>		
(includes capillary fringe)									

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR3111\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Rubus stellatus	2	No	FAC
Trientalis europaea	2	No	FACU
Dryopteris expansa	1	No	FACU
Thelypteris pheqopteris	1	No	FACU

Additional Reference Data: Photos

HDR3111\_18



Photo Name: Photo\_180710154257



Photo Name: Photo\_180710154241



## Additional Reference Data: Photos

HDR3111\_18



Photo Name: Photo\_180710154350



Photo Name: Photo\_180710154333



Photo Name: Photo\_180710154247



**Photo Name:** Photo\_180710154306



Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	7/11/2018
Applicant/Owner:	PLP			Sampling Point:	HDR3113_18
Investigators:	MS AH	Landform (hillslope, terrace, etc.):	Hillslope		
Local Relief (concave, convex, none):	None	Slope(%):	16	HGM:	N/A
Subregion (LRR):	X	Lat:	59.907856	Long:	-155.413406
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are Vegetation:            Soil            or Hydrology            naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Tree Stratum				Dominance Test Worksheet:			
		Absolute % Cover	Dominant Species?	Indicator Status	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)		
1.					Total Number of Dominant Species Across All Strata: <u>3</u> (B)		
2.					Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)		
3.					<b>Prevalence Index worksheet:</b>		
4.					Total % Cover of: <u>          </u> Multiply by: <u>          </u>		
Total Cover:					OBL species <u>          </u> x1= <u>          </u>		
50% of total cover:		<u>0</u>	20% of total cover:	<u>0</u>	FACW species <u>14</u> x2= <u>28</u>		
					FAC species <u>167</u> x3= <u>501</u>		
					FACU species <u>34</u> x4= <u>136</u>		
					UPL species <u>          </u> x5= <u>          </u>		
					Column Totals: <u>215</u> (A) <u>665</u> (B)		
					<i>Prevalence Index = B/A =</i> <u>3.09</u>		
Sapling/Shrub Stratum				Hydrophytic Vegetation Indicators:			
1.	Salix pulchra	90	Yes	FAC	X	Dominance Test is >50%	
2.						Prevalence Index is ≤3.0	
3.						Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)	
4.						Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
5.							
6.							
Total Cover:		<u>90</u>	20% of total cover:	<u>18</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.		
50% of total cover:		<u>45</u>					
Herb Stratum				Hydrophytic			
1.	Calamagrostis canadensis	50	Yes	FAC	Vegetation		
2.	Equisetum arvense	20	Yes	FAC	Yes <u>X</u> No <u>          </u>		
3.	Dryopteris expansa	15	No	FACU	Present?		
4.	Sanguisorba canadensis	12	No	FACW			
5.	Geranium erianthum	5	No	FACU			
6.	Heracleum maximum	5	No	FACU			
7.	Anemone richardsonii	3	No	FAC			
8.	Chamaenerion angustifolium	3	No	FACU			
9.	Rubus arcticus s.l.	2	No	FAC			
10.	Rubus stellatus	2	No	FAC			
Total Cover:		<u>125</u>	20% of total cover:	<u>25</u>			
50% of total cover:		<u>62.5</u>					
Plot size (radius, or length x width) <u>1/10 acre</u>				% Bare Ground	<u>0</u>		
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>45</u>					
(Where applicable)							

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oe
2-22	7.5YR2.5/3	100						Loam	hor:A *2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: SED - Somewhat Excessively Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: No hydric soil indicators observed. \*2: With organic staining at 8". 5% rounded gravel throughout entire horizon.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Dry pit. No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3113\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Angelica lucida	2	No	FACU
Gymnocarpium dryopteris	2	No	FACU
Streptopus amplexifolius	2	No	FACU
Viola lanqsdorffii	2	No	FACW

Additional Reference Data: Photos

HDR3113\_18



Photo Name: Photo\_180710161912



Photo Name: Photo\_180710161827



## Additional Reference Data: Photos

HDR3113\_18



**Photo Name:** Photo\_180710161848



**Photo Name:** Photo\_180710161805



**Photo Name:** Photo\_180710161815



**Photo Name:** Photo\_180710161801

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/11/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3114_18</u>	
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): <u>12</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.897312</u>	Long: <u>-155.393539</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Dwarf Ericaceous Shrub Tundra (DEST)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: <u>Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>80</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix pulchra</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>12</u> x2= <u>24</u>
4. <u>Loiseleuria procumbens</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	FAC species <u>145</u> x3= <u>435</u>
5. <u>Spiraea stevenii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	FACU species <u>15</u> x4= <u>60</u>
6. <u>Vaccinium vitis-idaea</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	UPL species <u>12</u> x5= <u>60</u>
Total Cover: <u>111</u>				Column Totals: <u>184</u> (A) <u>579</u> (B)
50% of total cover: <u>55.5</u>				<u>Prevalence Index = B/A=</u> <u>3.15</u>
20% of total cover: <u>22.2</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex microchaeta</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Sanguisorba canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Luetkea pectinata</u>	<u>10</u>	<u>Yes</u>	<u>UPL</u>	data in Remarks or on a separate sheet)
5. <u>Dryopteris expansa</u>	<u>7</u>	<u>No</u>	<u>FACU</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Poa arctica</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
7. <u>Rubus arcticus s.l.</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Veratrum viride</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Micranthes nelsoniana</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Rhodiola integrifolia</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>73</u>				
50% of total cover: <u>36.5</u>				
20% of total cover: <u>14.6</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>15</u>				
(Where applicable)				
Remarks: <u>Some patches of BH mixed in.</u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oe
2-17	10YR3/2	100					No	Loam	hor:A *2
17-24	10YR3/3	100					No	Sandy Loam	hor:B 25% medium and coarse gravel.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type: None			
Depth (inches): N/A			
Field Drainage Class: WD - Well Drained			
	<b>Hydric Soil Present?</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: No hydric soil indicators observed. \*2: With organic staining. 10% coarse subangular.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/>	Depth (inches):		<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> X <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	20.0	
Saturation Present? Yes <input type="checkbox"/> X <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	19.0	
(includes capillary fringe)			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3114\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Gymnocarpium dryopteris	1	No	FACU
Listera cordata	1	No	FACU
Trientalis europaea	1	No	FACU
Senecio trianularis	1	No	FACW
Viola langsdorffii	1	No	FACW
Arnica lessingii	1	No	NL
Artemisia arctica	1	No	NL

Additional Reference Data: Photos

HDR3114\_18



Photo Name: Photo\_180711082634



Photo Name: Photo\_180711082604



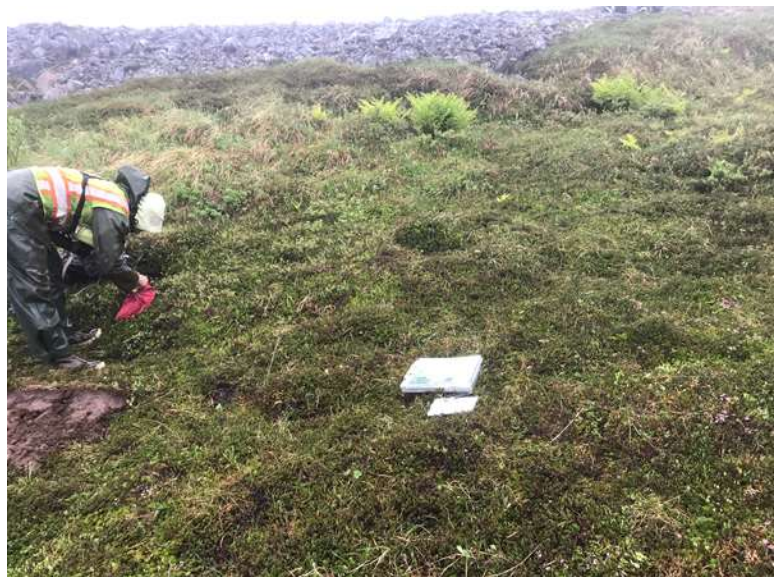


Photo Name: Photo\_180711082555



Photo Name: Photo\_180711082549



Photo Name: Photo\_180711082705





Photo Name: Photo\_180711082722

Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	7/11/2018
Applicant/Owner:	PLP			Sampling Point:	HDR3115_18
Investigators:	MS AH	Landform (hillslope, terrace, etc.):	Toeslope		
Local Relief (concave, convex, none):	Concave	Slope(%):	3	HGM:	Slope
Subregion (LRR):	X	Lat:	59.897652	Long:	-155.393173
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	PSS1/EM1C		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ X \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.) \_\_\_\_\_

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>    X    </u>	No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>			

Tree Stratum				Dominance Test Worksheet:				
Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Number of Dominant Species			
1.					That Are OBL, FACW, or FAC: 3 (A)			
2.					Total Number of Dominant			
3.					Species Across All Strata: 3 (B)			
4.					Percent of Dominant Species			
Total Cover:					That Are OBL, FACW, or FAC: 100 (A/B)			
50% of total cover:		0	20% of total cover:		0			
Sapling/Shrub Stratum				Prevalence Index worksheet:				
Sapling/Shrub Stratum					Total % Cover of: Multiply by:			
1.	Salix pulchra	15	Yes	FAC	OBL species	12	x1=	12
2.					FACW species	4	x2=	8
3.					FAC species	183	x3=	549
4.					FACU species	1	x4=	4
5.					UPL species		x5=	
6.					Column Totals:	200	(A)	573 (B)
Total Cover:		15	20% of total cover:		3	Prevalence Index = B/A= 2.87		
50% of total cover:		7.5						
Herb Stratum				Hydrophytic Vegetation Indicators:				
1.	Equisetum arvense	80	Yes	FAC	X	Dominance Test is >50%		
2.	Calamagrostis canadensis	70	Yes	FAC	X	Prevalence Index is ≤3.0		
3.	Carex aquatilis	7	No	OBL	Morphological Adaptations <sup>1</sup> (Provide			
4.	Carex podocarpa	5	No	FAC	data in Remarks or on a separate sheet)			
5.	Rubus arcticus s.l.	5	No	FAC	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)			
6.	Carex utriculata	5	No	OBL				
7.	Rubus stellatus	3	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology			
8.	Micranthes nelsoniana	2	No	FAC	must be present, unless disturbed or problematic.			
9.	Stellaria longipes	2	No	FAC				
10.	Petasites frigidus s.l.	2	No	FACW				
Total Cover:		185	20% of total cover:		37	Hydrophytic		
50% of total cover:		92.5				Vegetation		
Plot size (radius, or length x width) 1/10 acre			% Bare Ground		0	Yes X No		
% Cover of Wetland Bryophytes 0			% Cover of Bryophytes 50			Present?		
(Where applicable)								

Remarks:
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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A		hor:Oe
5-16	2.5Y3/2	88	2.5YR3/6	2	C	PL	No	Loam	hor:B 10% pockets of coarse sand.
5-16			5YR4/6	10	C	PL	No	Loam	hor:B 10% pockets of coarse sand.
16-20	10YR3/3	100					No	Sandy Loam	hor:B/C *4

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input checked="" type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks: Landscape position and strong primary hydrology. \*4: 60% subangular coarse gravel and cobble.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	2.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	0.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	0.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Lots of water pouring out of slope break.

Geomorphic Position: Toeslope of boulder field and snowpack.



Additional Reference Data: Overflow Vegetation

HDR3115\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Sanquisorba canadensis	2	No	FACW
Claytonia sarmentosa	1	No	FAC
Angelica lucida	1	No	FACU

Additional Reference Data: Photos

HDR3115\_18



Photo Name: Photo\_180711093307



Photo Name: Photo\_180711093352



## Additional Reference Data: Photos

HDR3115\_18



**Photo Name:** Photo\_180711093326



**Photo Name:** Photo\_180711093301



**Photo Name:** Photo\_180711093319



Photo Name: Photo\_180711093404



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/11/2018  
 Applicant/Owner: PLP Sampling Point: HDR3116\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 15 HGM: N/A  
 Subregion (LRR): X Lat: 59.899326 Long: -155.391830 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Bluejoint Herb (BH)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Entire polygon is upland. Either DEST or BH. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>80</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index worksheet:</b>				
Total % Cover of:		Multiply by:		
OBL species	<u>      </u>	x1=	<u>      </u>	
FACW species	<u>53</u>	x2=	<u>106</u>	
FAC species	<u>107</u>	x3=	<u>321</u>	
FACU species	<u>28</u>	x4=	<u>112</u>	
UPL species	<u>2</u>	x5=	<u>10</u>	
Column Totals:	<u>190</u> (A)		<u>549</u> (B)	
Prevalence Index = B/A=				<u>2.89</u>
<b>Hydrophytic Vegetation Indicators:</b>				
X	Dominance Test is >50%			
X	Prevalence Index is ≤3.0			
Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)				
Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Empetrum nigrum</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Spiraea stevenii</u>	<u>4</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Vaccinium uliginosum</u>	<u>3</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Salix pulchra</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>14</u>				
50% of total cover: <u>7</u>				
20% of total cover: <u>2.8</u>				
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Sanguisorba canadensis</u>	<u>50</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Chamaenerion angustifolium</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	
4. <u>Festuca altaica</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
5. <u>Veratrum viride</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
6. <u>Dryopteris expansa</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
7. <u>Carex podocarpa</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
8. <u>Viola langsdoeffii</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	
9. <u>Rhodiola integrifolia</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
10. <u>Rubus stellatus</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>176</u>				
50% of total cover: <u>88</u>				
20% of total cover: <u>35.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				% Bare Ground <u>0</u>
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>20</u>		
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-20	7.5YR3/2	100					No	Loam	hor:A *2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes _____ No _____ X _____	
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		

Remarks: No hydric soil indicators observed. \*2: 1/4" seam of sand under a 1/4" seam of Oe at 4-6". 10% coarse gravel. Organic staining.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Salt Deposits (C5)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> FAC-Neutral Test (D5)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)				
<input type="checkbox"/> Algal Mat or Crust (B4)					
<input type="checkbox"/> Iron Deposits (B5)					
<input type="checkbox"/> Surface Soil Cracks (B6)					

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):			
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):			
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Dry pit. No primary hydrology indicators observed.
Geomorphic Position: Steep slope.

Additional Reference Data: Overflow Vegetation

HDR3116\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Anemone narcissiflora	1	No	FACU
Angelica lucida	1	No	FACU
Gymnocarpium dryopteris	1	No	FACU
Trientalis europaea	1	No	FACU
Artemisia arctica	1	No	NL
Luetkea pectinata	1	No	UPL

Additional Reference Data: Photos

HDR3116\_18



Photo Name: Photo\_180711103403



Photo Name: Photo\_180711103358





Photo Name: Photo\_180711103412



Photo Name: Photo\_180711104155



Photo Name: Photo\_180711103350



Photo Name: Photo\_180711104112

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/11/2018</u>
Applicant/Owner: <u>PLP</u>		Sampling Point: <u>HDR3118_18</u>
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>4</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.899479</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>U</u>	

Vegetation Type: Dwarf Ericaceous Shrub Tundra (DEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: <u>Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>80</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Vaccinium uliginosum</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Betula nana</u>	<u>25</u>	<u>No</u>	<u>FAC</u>	FACW species <u>3</u> x2= <u>6</u>
4. <u>Salix pulchra</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FAC species <u>193</u> x3= <u>579</u>
5. <u>Spiraea stevenii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	FACU species <u>6</u> x4= <u>24</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>9</u> x5= <u>45</u>
Total Cover: <u>174</u>				Column Totals: <u>211</u> (A) <u>654</u> (B)
50% of total cover: <u>87</u>				<u>Prevalence Index = B/A=</u> <u>3.10</u>
20% of total cover: <u>34.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex microchaeta</u>	<u>7</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Cornus suecica</u>	<u>6</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Prevalence Index is ≤3.0
3. <u>Hierochloe alpina</u>	<u>6</u>	<u>Yes</u>	<u>NL</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex bigelowii</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Carex podocarpa</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Festuca altaica</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
7. <u>Poa arctica</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Anemone narcissiflora</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	must be present, unless disturbed or problematic.
9. <u>Angelica lucida</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
10. <u>Bistorta plumosa</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>37</u>				
50% of total cover: <u>18.5</u>				
20% of total cover: <u>7.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>65</u>				
(Where applicable)				
Remarks: <u>Lichen 5%.</u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oe
2-4							N/A		hor:Oa
4-5							N/A	Sand	hor:C Medium grain sand. Brown.
5-10	5YR2.5/1	100					No	Loam	hor:A
10-24	7.5YR2.5/2	100					No	Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	MWD - Moderately Well Drained				
		<b>Hydric Soil Present?</b>	Yes	No	X

Remarks: Between 4"-24" 40% subangular and angular medium and coarse gravel. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<u>      </u>	No	<u>  X  </u>	Depth (inches):	<u>  </u>			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
High antecedent precipitation.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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Herb	Absolute % Cover	Dominant Species?	Indicator Status
Lycopodium annotinum s.l.	1	No	FACU
Pedicularis labradorica	1	No	FACW
Petasites frigidus s.l.	1	No	FACW
Rubus chamaemorus	1	No	FACW
Arnica lessingii	1	No	NL
Artemisia arctica	1	No	NL
Lagotis glauca s.l.	1	No	NL

Additional Reference Data: Photos

HDR3118\_18



Photo Name: Photo\_180711113040



Photo Name: Photo\_180711113105



## Additional Reference Data: Photos

HDR3118\_18



Photo Name: Photo\_180711113054



Photo Name: Photo\_180711113016



Photo Name: Photo\_180711113007





Photo Name: Photo\_180711113025

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/11/2018  
 Applicant/Owner: PLP Sampling Point: HDR3121\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 9 HGM: N/A  
 Subregion (LRR): X Lat: 59.900860 Long: -155.394928 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Alder – Willow Tall Shrub (CAWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks: Alder patches are drier than willow patches. Wetter than normal antecedent precipitation					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
Sapling/Shrub Stratum				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Alnus sinuata</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix barclayi</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>16</u> x2= <u>32</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>139</u> x3= <u>417</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>27</u> x4= <u>108</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>105</u>				Column Totals: <u>182</u> (A) <u>557</u> (B)
50% of total cover: <u>52.5</u>				Prevalence Index = B/A= <u>3.06</u>
20% of total cover: <u>21</u>				
Herb Stratum				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	Prevalence Index is ≤3.0
3. <u>Thelypteris phegopteris</u>	<u>12</u>	<u>No</u>	<u>FACU</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Dryopteris expansa</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
5. <u>Athyrium cyclosorum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Angelica lucida</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
7. <u>Anemone richardsonii</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Equisetum sylvaticum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Polemonium acutiflorum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Veratrum viride</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>77</u>				
50% of total cover: <u>38.5</u>				
20% of total cover: <u>15.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>      </u> % Cover of Bryophytes <u>40</u>				
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oe
1-2							N/A		hor:Oa
2-8	7.5Y2.5/2	100					No	Silt Loam	hor:A
8-18	7.5YR3/2	100					No	Loam	hor:B 60% subangular coarse gravel.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	No	X
Depth (inches):	N/A				
Field Drainage Class:	MWD - Moderately Well Drained				

Remarks: 18+” cobble/gravel. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	Yes	X	No
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):			
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):			
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Heavy recent rainfall. Antecedent precipitation is high.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR3121\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Chamaenerion angustifolium	1	No	FACU
Geranium erianthum	1	No	FACU
Trientalis europaea	1	No	FACU
Petasites frigidus s.l.	1	No	FACW

Additional Reference Data: Photos

HDR3121\_18



Photo Name: Photo\_180711132943



Photo Name: Photo\_180711132933



Photo Name: Photo\_180711133447



Photo Name: Photo\_180711133431



Photo Name: Photo\_180711132952





Photo Name: Photo\_180711132928



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/11/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3124_18</u>	
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>3</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.899860</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NW1 Classification: <u>U</u>	

Vegetation Type: Open Alder Tall Shrub (OATS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Next to heavily incised stream. Valley is 15' high. On border of CATS and BH -all upland, at upstream end of mosaic polygon both banks turn to upland. Downstream wet BH is wrong. It is upland BH. Wetter than normal antecedent precipitation.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>67</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Alnus sinuata</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Spiraea stevenii</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix pulchra</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	FACW species <u>10</u> x2= <u>20</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>107</u> x3= <u>321</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>30</u> x4= <u>120</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>26</u>				Column Totals: <u>147</u> (A) <u>461</u> (B)
50% of total cover: <u>13</u>				Prevalence Index = B/A= <u>3.14</u>
20% of total cover: <u>5.2</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Dryopteris expansa</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index is ≤3.0
3. <u>Equisetum sylvaticum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Poa arctica</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Veratrum viride</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Sanguisorba canadensis</u>	<u>7</u>	<u>No</u>	<u>FACW</u>	
7. <u>Angelica lucida</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Viola langsdoeffii</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	must be present, unless disturbed or problematic.
9. <u>Rhodiola integrifolia</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Chamaenerion angustifolium</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>121</u>				
50% of total cover: <u>60.5</u>				
20% of total cover: <u>24.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>50</u>				
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oe
3-6	7.5YR2.5/2	100					No	Sandy Loam	hor:A 30% subangular coarse gravel.
6-20	10YR3/3	50					No	Loamy Sand	hor:B/C 30% subangular coarse gravel
6-20	10YR4/3	50					No	Loamy Sand	hor:B/C 30% subangular coarse gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Dry pit. No primary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3124\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Gymnocarpium dryopteris	1	No	FACU
Trientalis europaea	1	No	FACU
Senecio triangularis	1	No	FACW

Additional Reference Data: Photos

HDR3124\_18



Photo Name: Photo\_180711145044



Photo Name: Photo\_180711145416



## Additional Reference Data: Photos

HDR3124\_18



Photo Name: Photo\_180711145142



Photo Name: Photo\_180711145052



Photo Name: Photo\_180711145432



**Photo Name:** Photo\_180711145107

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/12/2018  
 Applicant/Owner: PLP Sampling Point: HDR3126\_18  
 Investigators: AH MS Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 3 HGM: Slope  
 Subregion (LRR): X Lat: 59.896832 Long: -155.399429 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1/EM1C

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Empetrum nigrum</u>	30	Yes	FAC	<u>Total % Cover of:</u> <u>16</u> <u>Multiply by:</u> <u>16</u>
2. <u>Salix pulchra</u>	25	Yes	FAC	OBL species <u>16</u> x1= <u>16</u>
3. <u>Vaccinium uliginosum</u>	15	Yes	FAC	FACW species <u>21</u> x2= <u>42</u>
4. <u>Salix fuscescens</u>	5	No	FACW	FAC species <u>81</u> x3= <u>243</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>1</u> x4= <u>4</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>3</u> x5= <u>15</u>
Total Cover: <u>75</u>				Column Totals: <u>122</u> (A) <u>320</u> (B)
50% of total cover: <u>37.5</u>				<u>Prevalence Index = B/A=</u> <u>2.62</u>
20% of total cover: <u>15</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex pluriflora</u>	15	Yes	OBL	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	10	Yes	FACW	<u>X</u> Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	5	No	FAC	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus chamaemorus</u>	4	No	FACW	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Anemone richardsonii</u>	2	No	FAC	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Saxifraga punctata s.l.</u>	2	No	FAC	
7. <u>Rhodiola integrifolia</u>	2	No	NL	
8. <u>Equisetum sylvaticum</u>	1	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology
9. <u>Polygonum viviparum</u>	1	No	FAC	must be present, unless disturbed or problematic.
10. <u>Chamaenerion angustifolium</u>	1	No	FACU	
Total Cover: <u>47</u>				
50% of total cover: <u>23.5</u>				
20% of total cover: <u>9.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>25</u> % Cover of Bryophytes <u>90</u>				
(Where applicable)				
Remarks: <u>      </u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oi
3-10							N/A		hor:Oe *2
10-15	10YR 2/1	100					No	Loam	hor:A *3
15-16	10YR 3/2						No	Loam	hor:B *4

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			<b>Hydric Soil Present?</b>	Yes	<u>  X  </u>	No	<u>          </u>
Type:	<u>  None  </u>						
Depth (inches):	<u>  N/A  </u>						
Field Drainage Class:	<u>  PD - Poorly Drained  </u>						

Remarks: H2S detected in upper portion of soil. \*2: 75% coarse gravel, cobble, and stone. \*3: 75% cobble, coarse gravel, and stone. \*4: 90% coarse gravel, cobble, and stone.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> X	No	
Surface Water Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):				
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):				
Saturation Present? (includes capillary fringe)	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Multiple seeps through area.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3126\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Pedicularis sudetica	1	No	FACW
Petasites frigidus s.l.	1	No	FACW
Primula eximia	1	No	NL
Primula cuneifolia	1	No	OBL

Additional Reference Data: Photos

HDR3126\_18



Photo Name: Photo\_180711162143



Photo Name: Photo\_180711162156



## Additional Reference Data: Photos

HDR3126\_18



**Photo Name:** Photo\_180711162224



**Photo Name:** Photo\_180711162201



**Photo Name:** Photo\_180711162147





Photo Name: Photo\_180711162213

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/12/2018  
 Applicant/Owner: PLP Sampling Point: HDR3127\_18  
 Investigators: AH MS Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 12 HGM: N/A  
 Subregion (LRR): X Lat: 59.896854 Long: -155.399185 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra (DEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>		
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>		

Remarks: Paired plot with 3126. Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
Total Cover: <u>      </u>				<b>Prevalence Index worksheet:</b>
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
<b>Sapling/Shrub Stratum</b>				OBL species <u>      </u> x1= <u>      </u>
1. <u>Empetrum nigrum</u>	80	Yes	FAC	FACW species <u>17</u> x2= <u>34</u>
2. <u>Vaccinium uliginosum</u>	25	Yes	FAC	FAC species <u>136</u> x3= <u>408</u>
3. <u>Spiraea stevenii</u>	10	No	FACU	FACU species <u>15</u> x4= <u>60</u>
4. <u>Vaccinium vitis-idaea</u>	3	No	FAC	UPL species <u>4</u> x5= <u>20</u>
5. <u>Salix pulchra</u>	2	No	FAC	Column Totals: <u>172</u> (A) <u>522</u> (B)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>120</u>				<u>Prevalence Index = B/A=</u> <u>3.03</u>
50% of total cover: <u>60</u>		20% of total cover: <u>24</u>		<b>Hydrophytic Vegetation Indicators:</b>
<b>Herb Stratum</b>				X Dominance Test is >50%
1. <u>Rubus chamaemorus</u>	15	Yes	FACW	Prevalence Index is ≤3.0
2. <u>Calamagrostis canadensis</u>	10	Yes	FAC	Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)
3. <u>Carex podocarpa</u>	10	Yes	FAC	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4. <u>Equisetum arvense</u>	5	No	FAC	
5. <u>Sanguisorba canadensis</u>	2	No	FACW	
6. <u>Luetkea pectinata</u>	2	No	UPL	
7. <u>Veratrum viride</u>	1	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. <u>Anemone narcissiflora</u>	1	No	FACU	
9. <u>Angelica lucida</u>	1	No	FACU	
10. <u>Dryopteris expansa</u>	1	No	FACU	
Total Cover: <u>52</u>				
50% of total cover: <u>26</u>		20% of total cover: <u>10.4</u>		
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
% Cover of Wetland Bryophytes <u>0</u> (Where applicable) % Cover of Bryophytes <u>20</u>				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oe
3-6	10YR 2/2	100					N/A	Loam	hor:A 25% gravel and 25% cobble.
6-20	7.5YR 2.5/2	100					N/A	Loam	hor:B 25% gravel and 25% cobble.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	WD - Well Drained				

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>					
Surface Water Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	X <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	X <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	X <input checked="" type="checkbox"/>	Depth (inches):	
(includes capillary fringe)					
			<b>Wetland Hydrology Present?</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Dry pit. No primary hydrology indicators observed.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR3127\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Gymnocarpium dryopteris	1	No	FACU
Lycopodium alpinum	1	No	FACU
Artemisia arctica	1	No	NL
Rhodiola integrifolia	1	No	NL

Additional Reference Data: Photos

HDR3127\_18



Photo Name: Photo\_180711162617



Photo Name: Photo\_180711162632



## Additional Reference Data: Photos

HDR3127\_18



**Photo Name:** Photo\_180711162549



**Photo Name:** Photo\_180711162717



**Photo Name:** Photo\_180711162558



Photo Name: Photo\_180711162651



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/12/2018  
 Applicant/Owner: PLP Sampling Point: HDR3128\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Floodplain  
 Local Relief (concave, convex, none): Concave Slope(%): 3 HGM: N/A  
 Subregion (LRR): X Lat: 59.914345 Long: -155.349365 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks: <u>Wetter than normal antecedent precipitation</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<b>Prevalence Index worksheet:</b> <u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u> OBL species <u>2</u> x1= <u>2</u> FACW species <u>34</u> x2= <u>68</u> FAC species <u>108</u> x3= <u>324</u> FACU species <u>52</u> x4= <u>208</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>196</u> (A) <u>602</u> (B)  <i>Prevalence Index = B/A=</i> <u>3.07</u>
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				
50% of total cover: <u>0</u>			20% of total cover: <u>0</u>	
<u>Sapling/Shrub Stratum</u>				
1. <u>Salix pulchra</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>X</u> Dominance Test is >50% <u>      </u> Prevalence Index is ≤3.0 <u>      </u> Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
2. <u>Salix barclayi</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
3. <u>Betula nana</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
4. <u>Empetrum nigrum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
5. <u>Vaccinium vitis-idaea</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
6. <u>Linnaea borealis</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>53</u>				
50% of total cover: <u>26.5</u>			20% of total cover: <u>10.6</u>	
<u>Herb Stratum</u>				
1. <u>Calamagrostis canadensis</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Sanguisorba canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Chamaenerion angustifolium</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	
4. <u>Geranium erianthum</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	
5. <u>Lycopodium annotinum s.l.</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
6. <u>Pyrola minor</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
7. <u>Rubus arcticus s.l.</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
8. <u>Luzula multiflora</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
9. <u>Juncus castaneus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
10. <u>Petasites frigidus s.l.</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
Total Cover: <u>143</u>				
50% of total cover: <u>71.5</u>			20% of total cover: <u>28.6</u>	
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u> % Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>65</u> (Where applicable)				
Remarks: <u>Car can, Jun cas, and Com pal growing directly on stream fringe.</u>				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oe
2-3	5Y5/2	100						Loam	hor:A
3-5	10YR3/2	50					No	Loam	hor:B Wavy boundry 5-7 inches.
3-5	10YR4/2	50					No	Loam	hor:B Wavy boundry 5-7 inches.
5-8	7.5 YR4/4	100					No	Loamy Sand	hor:B *5
8-12	2.5Y4/2	85	5YR4/4	15	C	PL	No	Silty Clay Loam	hor:B
12-22	2.5Y4/3	75	7.5YR4/6	25	C	PL	No	Sandy Clay Loam	hor:C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☐ Histosol or Histel (A1)

☐ Histic Epipedon (A2)

☐ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☐ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder

☐ Underlying Layer

☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  

Type: None

Depth (inches):

Field Drainage Class: WD - Well Drained

**Hydric Soil Present?** Yes No X

Remarks: Between 5-22"- 20% coarse gravel. No primary hydrology. \*5: With pockets of sand 60% small and medium gravel.

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  

☐ Surface Water (A1)

☐ High Water Table (A2)

☐ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☐ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**  

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☐ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☒ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☐ FAC-Neutral Test (D5)

**Field Observations:**  

Surface Water Present? Yes No X

Water Table Present? Yes No X

Saturation Present? Yes No X

Depth (inches):

Depth (inches):

Depth (inches):

(includes capillary fringe)

**Wetland Hydrology Present?** Yes No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
High antecedent precipitation. Dry pit. No primary hydrology indicators observed.

Geomorphic Position: Floodplain of small stream.

Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
Cornus suecica	3	No	FAC
Carex canescens	3	No	FACW
Anemone richardsonii	2	No	FAC
Equisetum arvense	2	No	FAC
Gymnocarpium dryopteris	2	No	FACU
Trientalis europaea	2	No	FACU
Comarum palustre	2	No	OBL
Aconitum delphiniifolium	1	No	FAC
Angelica genuflexa	1	No	FACW
<b>Sapling/Shrub</b>			
Spiraea stevenii	1	No	FACU
Viburnum edule	1	No	FACU

Additional Reference Data: Photos

HDR3128\_18



Photo Name: Photo\_180712093159



Photo Name: Photo\_180712093308



## Additional Reference Data: Photos

HDR3128\_18



**Photo Name:** Photo\_180712093151



**Photo Name:** Photo\_180712093143



**Photo Name:** Photo\_180712093207



Photo Name: Photo\_180712093238

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/12/2018  
 Applicant/Owner: PLP Sampling Point: HDR3130\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): None Slope(%): 3 HGM: N/A  
 Subregion (LRR): X Lat: 59.912907 Long: -155.354111 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks: <u>Wetter than normal antecedent precipitation</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)	
Total Cover: <u>      </u>				Percent of Dominant Species	
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
20% of total cover: <u>0</u>					
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1. <u>Empetrum nigrum</u>	<u>85</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:	
2. <u>Vaccinium uliginosum</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>	
3. <u>Betula nana</u>	<u>40</u>	<u>No</u>	<u>FAC</u>	FACW species <u>16</u> x2= <u>32</u>	
4. <u>Salix pulchra</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FAC species <u>215</u> x3= <u>645</u>	
5. <u>Vaccinium vitis-idaea</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FACU species <u>9</u> x4= <u>36</u>	
6. <u>Rhododendron tomentosum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	UPL species <u>2</u> x5= <u>10</u>	
Total Cover: <u>202</u>				Column Totals: <u>242</u> (A) <u>723</u> (B)	
50% of total cover: <u>101</u>				Prevalence Index = B/A= <u>2.99</u>	
20% of total cover: <u>40.4</u>					
Herb Stratum				Hydrophytic Vegetation Indicators:	
1. <u>Sanguisorba canadensis</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Dominance Test is >50%	
2. <u>Carex microchaeta</u>	<u>8</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0	
3. <u>Cornus suecica</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide	
4. <u>Rubus stellatus</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)	
5. <u>Dryopteris expansa</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
6. <u>Chamaenerion angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>		
7. <u>Lycopodium annotinum s.l.</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology	
8. <u>Hierochloe alpina</u>	<u>2</u>	<u>No</u>	<u>NL</u>	must be present, unless disturbed or problematic.	
9. <u>Salix arctica</u>	<u>1</u>	<u>No</u>	<u>FAC</u>		
10. <u>Trientalis europaea</u>	<u>1</u>	<u>No</u>	<u>FACU</u>		
Total Cover: <u>40</u>				<b>Hydrophytic Vegetation Present?</b>	
50% of total cover: <u>20</u>					
20% of total cover: <u>8</u>					
Plot size (radius, or length x width) <u>1/10 acre</u>				Yes <u>X</u> No <u>      </u>	
% Cover of Wetland Bryophytes <u>1</u>					
(Where applicable)					
Remarks:					



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oe
2-3	10YR2/2	100					No	Loam	hor:A
3-20	10YR3/3	100					No	Loamy Sand	hor:B 25% small and medium gravel.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	WD - Well Drained				

Remarks: Pit dug in low spot near the wetland boundary. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>					
Surface Water Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):		
Water Table Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):	13.0	
Saturation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):	11.0	
(includes capillary fringe)			<b>Wetland Hydrology Present?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Pit dug between hummocks near wetland boundary. High antecedent precipitation.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Salix barclayi	2	No	FAC
Spiraea stevenii	1	No	FACU
Andromeda polifolia	1	No	FACW

Additional Reference Data: Photos

HDR3130\_18



Photo Name: Photo\_180712111001



Photo Name: Photo\_180712110948

## Additional Reference Data: Photos

HDR3130\_18



**Photo Name:** Photo\_180712110901



**Photo Name:** Photo\_180712110915



**Photo Name:** Photo\_180712110927





Photo Name: Photo\_180712111017

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/12/2018  
 Applicant/Owner: PLP Sampling Point: HDR3131\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): Concave Slope(%): 3 HGM: Slope  
 Subregion (LRR): X Lat: 59.918095 Long: -155.357208 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1/EM1B

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Carex (DEST-C)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index worksheet:</b>				
<u>Sapling/Shrub Stratum</u>				
1. <u>Empetrum nigrum</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Vaccinium uliginosum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>26</u> x1= <u>26</u>
3. <u>Betula nana</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	FACW species <u>62</u> x2= <u>124</u>
4. <u>Salix pulchra</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>147</u> x3= <u>441</u>
5. <u>Salix fuscescens</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	FACU species <u>4</u> x4= <u>16</u>
6. <u>Rhododendron tomentosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>130</u>				Column Totals: <u>239</u> (A) <u>607</u> (B)
50% of total cover: <u>65</u>				Prevalence Index = B/A= <u>2.54</u>
20% of total cover: <u>26</u>				
<u>Herb Stratum</u>				
1. <u>Rubus chamaemorus</u>	<u>50</u>	<u>Yes</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b>
2. <u>Carex pluriflora</u>	<u>25</u>	<u>Yes</u>	<u>OBL</u>	X Dominance Test is >50%
3. <u>Equisetum arvense</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	X Prevalence Index is ≤3.0
4. <u>Calamagrostis canadensis</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
5. <u>Carex bigelowii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
6. <u>Cornus suecica</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
7. <u>Rhodiola integrifolia</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
8. <u>Chamaenerion angustifolium</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
9. <u>Geranium erianthum</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	must be present, unless disturbed or problematic.
10. <u>Gymnocarpium dryopteris</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>109</u>				
50% of total cover: <u>54.5</u>				
20% of total cover: <u>21.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>35</u> % Cover of Bryophytes <u>85</u>				
(Where applicable)				
Remarks: <u>Hummocky.</u>				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oi
3-12							N/A		hor:Oe
12-20	10YR3/2	100					Yes	Loamy Sand	hor:B Medium and coarse gravel 60%.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks: H2S at 5".

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:					
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	3.0		
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	1.0		
(includes capillary fringe)			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
Sanquisorba canadensis	1	No	FACW
Comarum palustre	1	No	OBL
<b>Sapling/Shrub</b>			
Vaccinium vitis-idaea	3	No	FAC
Spiraea stevenii	1	No	FACU
Andromeda polifolia	1	No	FACW

Additional Reference Data: Photos

HDR3131\_18



Photo Name: Photo\_180712123547



Photo Name: Photo\_180712123030



## Additional Reference Data: Photos

HDR3131\_18



**Photo Name:** Photo\_180712123622



**Photo Name:** Photo\_180712123006



**Photo Name:** Photo\_180712123017



Photo Name: Photo\_180712123045



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/12/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3132_18</u>	
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Bench</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>1</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.917568</u>	Long: <u>-155.356659</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
NW1 Classification: <u>U</u>		

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	
Hydric Soil Present? Yes <u>      </u> No <u>X</u>		
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>		Yes <u>      </u> No <u>X</u>
Remarks: 2-3' hummocks. Wetter than normal antecedent precipitation. Lower angle slope/Bench feature.		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>85</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u>
2. <u>Vaccinium uliginosum</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Betula nana</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	FACW species <u>14</u> x2= <u>28</u>
4. <u>Salix pulchra</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FAC species <u>219</u> x3= <u>657</u>
5. <u>Spiraea stevenii</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	FACU species <u>12</u> x4= <u>48</u>
6. <u>Rhododendron tomentosum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>194</u>				Column Totals: <u>245</u> (A) <u>733</u> (B)
50% of total cover: <u>97</u>				<u>Prevalence Index = B/A=</u> <u>2.99</u>
20% of total cover: <u>38.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex bigelowii</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Rubus chamaemorus</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Geranium erianthum</u>	<u>4</u>	<u>No</u>	<u>FACU</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Carex microchaeta</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Sanguisorba canadensis</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	
7. <u>Equisetum arvense</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Rubus stellatus</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Chamaenerion angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
10. <u>Anemone richardsonii</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>51</u>				
50% of total cover: <u>25.5</u>				
20% of total cover: <u>10.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>20</u>				
(Where applicable)				
Remarks:				

Between upland DESLT and upland CWTS. Bottom of hummocks filled with lichen.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-5							N/A		hor:Oe
5-10	7.5YR2.5/2	100					No	Loam	hor:A 30% gravel and 20% cobble.
10-20	10YR3/2	89	2.5YR4/4	1	C	M	No	Sandy Loam	hor:B/C 30% gravel and 20% cobble.
10-20			5YR4/4	5	C	M	No	Sandy Loam	hor:B/C 30% gravel and 20% cobble.
10-20			7.5YR4/6	5	C	M	No	Sandy Loam	hor:B/C 30% gravel and 20% cobble.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☐ Histosol or Histel (A1)

☐ Histic Epipedon (A2)

☐ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☐ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder  
☐ Underlying Layer  
☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  

Type:  None

Depth (inches):  N/A

Field Drainage Class:  WD - Well Drained

**Hydric Soil Present?**    Yes ☐    No ☐    X ☒

Remarks: No hydric soil indicators observed. A couple stones in pit between 5-20".

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  

☐ Surface Water (A1)

☐ High Water Table (A2)

☐ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☐ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**  

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☐ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☐ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☒ FAC-Neutral Test (D5)

**Field Observations:**  

Surface Water Present?    Yes ☐    No ☒    X ☒

Water Table Present?    Yes ☐    No ☒    X ☒

Saturation Present?    Yes ☐    No ☒    X ☒

(includes capillary fringe)

Depth (inches):

Depth (inches):

Depth (inches):

**Wetland Hydrology Present?**    Yes ☐    No ☐    X ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Dry pit. No primary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
Cornus suecica	1	No	FAC
Rhodiola integrifolia	1	No	FAC
Trientalis europaea	1	No	FACU
Petasites frigidus s.l.	1	No	FACW
<b>Sapling/Shrub</b>			
Vaccinium vitis-idaea	2	No	FAC

Additional Reference Data: Photos

HDR3132\_18



Photo Name: Photo\_180712135306



Photo Name: Photo\_180712134031



## Additional Reference Data: Photos

HDR3132\_18



**Photo Name:** Photo\_180712134004



**Photo Name:** Photo\_180712134016



**Photo Name:** Photo\_180712135156



**Photo Name:** Photo\_180712134025

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/12/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3133_18</u>	
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Floodplain</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>2</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.914143</u>	Long: <u>-155.359512</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Closed Willow Tall Shrub (CWTS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: <u>Heavily incised 5' banks channel 15' from plot. Wetter than normal antecedent precipitation.</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>			20% of total cover: <u>0</u>	That Are OBL, FACW, or FAC: <u>75</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u>
2. <u>Salix alaxensis</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix glauca</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACW species <u>11</u> x2= <u>22</u>
4. <u>Spiraea stevenii</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	FAC species <u>168</u> x3= <u>504</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>35</u> x4= <u>140</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>78</u>				Column Totals: <u>214</u> (A) <u>666</u> (B)
50% of total cover: <u>39</u>			20% of total cover: <u>15.6</u>	<u>Prevalence Index = B/A=</u> <u>3.11</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Prevalence Index is ≤3.0
3. <u>Chamaenerion angustifolium</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Geranium erianthum</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Sanguisorba canadensis</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Athyrium cyclosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Dryopteris expansa</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
8. <u>Poa arctica</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
9. <u>Rubus stellatus</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
10. <u>Anemone richardsonii</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>138</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>69</u>			20% of total cover: <u>27.6</u>	
Plot size (radius, or length x width) <u>1/10 acre</u>			% Bare Ground <u>0</u>	
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <sup>5</sup> <u>      </u>		
(Where applicable)				
Remarks: <u>      </u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oe
3-14	7.5YR2.5/1	100					No	Loam	hor:A *2
14-17	7.5YR2.5/2	100					No	Silt Loam	hor:B *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	PD - Poorly Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: No hydric soil indicators observed. \*2: 90% subangular and rounded cobble. \*3: 90% subangular and rounded cobble.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)			<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)			<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)			<input type="checkbox"/> Marl Deposits (B15)		<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)			<input type="checkbox"/> Hydrogen Sulfide Odor (C1)		<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)			<input type="checkbox"/> Dry Season Water Table (C2)		<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)			<input type="checkbox"/> Other (Explain in Remarks)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)					<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)					<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)					<input type="checkbox"/> Microtopographic Relief (D4)
					<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>									
Surface Water Present?	Yes	<u>      </u>	No	<u>  X  </u>	Depth (inches):	<u>  </u>			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary hydrology indicators observed.

Geomorphic Position: Floodplain. Channel pops out of ground 15' away towards main channel. Heavily incised.

Additional Reference Data: Overflow Vegetation

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Herb	Absolute % Cover	Dominant Species?	Indicator Status
Angelica lucida	2	No	FACU
Aconitum delphiniifolium	1	No	FAC
Claytonia sarmentosa	1	No	FAC
Micranthes nelsoniana	1	No	FAC
Solidago multiradiata	1	No	FACU
Trientalis europaea	1	No	FACU
Epilobium hornemannii	1	No	FACW
Carex sp.	1	No	N/A
Viola sp.	1	No	N/A

Additional Reference Data: Photos

HDR3133\_18



Photo Name: Photo\_180712152959



Photo Name: Photo\_180712152629



## Additional Reference Data: Photos

HDR3133\_18



**Photo Name:** Photo\_180712152640



**Photo Name:** Photo\_180712152647



**Photo Name:** Photo\_180712152614





Photo Name: Photo\_180712152905

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/13/2018  
 Applicant/Owner: PLP Sampling Point: HDR3134\_18  
 Investigators: AH MS Landform (hillslope, terrace, etc.): Floodplain  
 Local Relief (concave, convex, none): None Slope(%): 0 HGM: N/A  
 Subregion (LRR): X Lat: 59.913643 Long: -155.359726 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			
Remarks: <u>Wetter than normal antecedent precipitation</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>6</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>83</u> (A/B)
20% of total cover: <u>0</u>				
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index worksheet:</b>
1. <u>Salix barclayi</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Salix pulchra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix alaxensis</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>20</u> x2= <u>40</u>
4. <u>Salix glauca</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>182</u> x3= <u>546</u>
5. <u>Spiraea stevenii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	FACU species <u>53</u> x4= <u>212</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>92</u>				Column Totals: <u>255</u> (A) <u>798</u> (B)
50% of total cover: <u>46</u>				Prevalence Index = B/A= <u>3.13</u>
20% of total cover: <u>18.4</u>				
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Chamaenerion angustifolium</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Sanguisorba canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	data in Remarks or on a separate sheet)
5. <u>Geranium erianthum</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Dryopteris expansa</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
7. <u>Cornus suecica</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Rubus stellatus</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Pyrola minor</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
10. <u>Rhodiola integrifolia</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>165</u>				
50% of total cover: <u>82.5</u>				
20% of total cover: <u>33</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>O</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>10</u>				
(Where applicable)				
Remarks: <u>Only 25% of willow is taller than 6'.</u>				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-20	7.5YR2.5/2	100					No	Loam	hor:A 2% coarse gravel..

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Dry pit. No wetland hydrology indicators observed.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

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Herb	Absolute % Cover	Dominant Species?	Indicator Status
Angelica lucida	2	No	FACU
Thelypteris phegopteris	2	No	FACU
Viola sp.	2	No	N/A
Aconitum delphiniifolium	1	No	FAC
Veratrum viride	1	No	FAC
Achillea millefolium s.l.	1	No	FACU
Heracleum maximum	1	No	FACU

Additional Reference Data: Photos

HDR3134\_18



Photo Name: Photo\_180712161420



Photo Name: Photo\_180712161441



## Additional Reference Data: Photos

HDR3134\_18



Photo Name: Photo\_180712161524



Photo Name: Photo\_180712161541



Photo Name: Photo\_180712161427



**Photo Name:** Photo\_180712161432



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/13/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3138_18</u>	
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>4</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.895504</u>	Long: <u>-155.400253</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: <u>Toeslope/bench. Seeps through out area. Better represented with stream channels than wetlands. Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Empetrum nigrum</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium uliginosum</u>	<u>6</u>	<u>No</u>	<u>FAC</u>	FACW species <u>28</u> x2= <u>56</u>
4. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>72</u> x3= <u>216</u>
5. <u>Spiraea stevenii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	FACU species <u>8</u> x4= <u>32</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>5</u> x5= <u>25</u>
Total Cover: <u>43</u>				Column Totals: <u>113</u> (A) <u>329</u> (B)
50% of total cover: <u>21.5</u>				<u>Prevalence Index = B/A=</u> <u>2.91</u>
20% of total cover: <u>8.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex podocarpa</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Petasites frigidus s.l.</u>	<u>4</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Anemone richardsonii</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Calamagrostis canadensis</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Equisetum arvense</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Viola langsdorffii</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
8. <u>Lagotis glauca s.l.</u>	<u>2</u>	<u>No</u>	<u>NL</u>	
9. <u>Micranthes nelsoniana</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Polemonium acutiflorum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>70</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>35</u>				
20% of total cover: <u>14</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Cover of Wetland Bryophytes <u>5</u>				
% Cover of Bryophytes <u>75</u>				
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-3							N/A		hor:Oe
3-9	10YR2/2	100					No	Loam	hor:A 80% coarse subangular gravel.
9-20	10YR3/3	100					No	Sandy Loam	hor:B *4

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	
Type:   None			
Depth (inches): <u>      N/A      </u>			
Field Drainage Class: <u>SPD - Somewhat Poorly Drained</u>			

Remarks: No hydric soil indicators observed.    \*4: 80% medium and coarse subangular gravel.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/>	Water-stained Leaves (B9)
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/>	Drainage Patterns (B10)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/>	Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/>	Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/>	Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/>	Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/>	Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/>	Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/>	FAC-Neutral Test (D5)

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Surface Water Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>      1.0      </u>			
Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>      0.0      </u>			
Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>      0.0      </u>			
(includes capillary fringe)			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

High antecedent precipitation. Precipitation moves quickly down the slope. Area has seeps that are exposed at slope breaks flow and then return underground.

Geomorphic Position: Bench.

Additional Reference Data: Overflow Vegetation

HDR3138\_18

	Absolute % Cover	Dominant Species?	Indicator Status
Herb			
Rhodiola integrifolia	1	No	FAC
Rubus stellatus	1	No	FAC
Veratrum viride	1	No	FAC
Anemone narcissiflora	1	No	FACU
Angelica lucida	1	No	FACU
Dryopteris expansa	1	No	FACU
Geranium erianthum	1	No	FACU
Polygonum bistorta ssp. plumosum	1	No	FACU
Trientalis europaea	1	No	FACU
Rumex arcticus	1	No	FACW
Senecio triangularis	1	No	FACW
Arnica lessingii	1	No	NL
Artemisia arctica	1	No	NL
Primula eximia	1	No	NL

Additional Reference Data: Photos

HDR3138\_18



Photo Name: Photo\_180713081747



Photo Name: Photo\_180713081733



## Additional Reference Data: Photos

HDR3138\_18



Photo Name: Photo\_180713081719



Photo Name: Photo\_180713081656

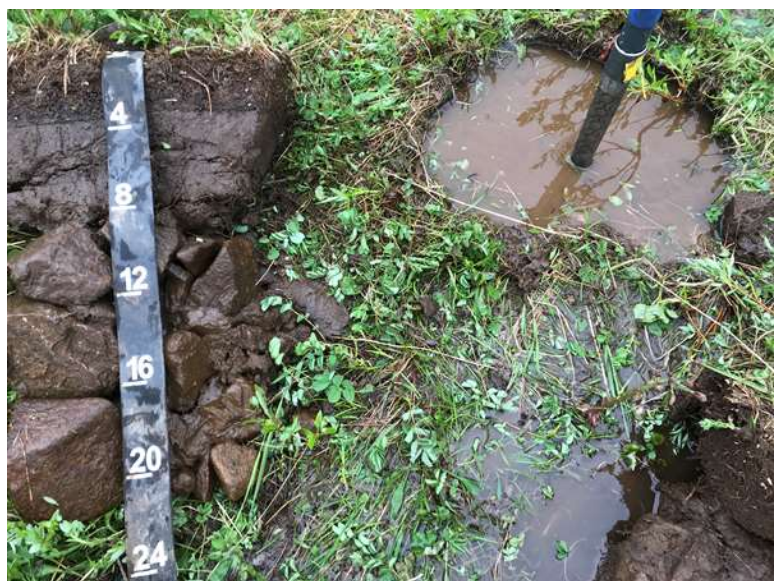


Photo Name: Photo\_180713081758



**Photo Name:** Photo\_180713081710

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/13/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR3140_18</u>	
Investigators: <u>MS AH</u>	Landform (hillslope, terrace, etc.): <u>Hillslope</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): <u>1</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.895264</u>	Long: <u>-155.401031</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: <u>Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Vaccinium uliginosum</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Betula nana</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Empetrum nigrum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>Salix pulchra</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	FAC species <u>213</u> x3= <u>639</u>
5. <u>Vaccinium vitis-idaea</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACU species <u>9</u> x4= <u>36</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>3</u> x5= <u>15</u>
Total Cover: <u>140</u>				Column Totals: <u>225</u> (A) <u>690</u> (B)
50% of total cover: <u>70</u>				Prevalence Index = B/A= <u>3.07</u>
20% of total cover: <u>28</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex microchaeta</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Rhodiola integrifolia</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus stellatus</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Poa arctica</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Angelica lucida</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
7. <u>Dryopteris expansa</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Geranium erianthum</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	must be present, unless disturbed or problematic.
9. <u>Lycopodium annotinum s.l.</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
10. <u>Arnica lessingii</u>	<u>2</u>	<u>No</u>	<u>NL</u>	
Total Cover: <u>85</u>				
50% of total cover: <u>42.5</u>				
20% of total cover: <u>17</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>20</u>				<b>Present?</b>
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-3							N/A		hor:Oe
3-8	10YR2/2	100					No	Loam	hor:A 80% coarse subangular gravel.
8-20	7.5YR2.5/2	100					No		hor:B *4

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>
Type:    None	
Depth (inches):    N/A	
Field Drainage Class:    WD - Well Drained	

Remarks: No hydric soil indicators observed.    \*4: 80% medium and coarse subangular gravel.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>
Surface Water Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/> Depth (inches):	
Water Table Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/> Depth (inches):	
Saturation Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/> Depth (inches): (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Dry pit. No wetland hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3140\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Aconitum delphiniifolium	1	No	FAC
Anemone richardsonii	1	No	FAC
Cornus suecica	1	No	FAC
Stellaria longipes	1	No	FAC
Veratrum viride	1	No	FAC
Chamaenerion angustifolium	1	No	FACU
Artemisia arctica	1	No	NL

Additional Reference Data: Photos

HDR3140\_18



Photo Name: Photo\_180713091054



Photo Name: Photo\_180713091044



## Additional Reference Data: Photos

HDR3140\_18



**Photo Name:** Photo\_180713090953



**Photo Name:** Photo\_180713091019



**Photo Name:** Photo\_180713091028





Photo Name: Photo\_180713091005

Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	7/13/2018
Applicant/Owner:	PLP			Sampling Point:	HDR3141_18
Investigators:	MS AH	Landform (hillslope, terrace, etc.):	Hillslope		
Local Relief (concave, convex, none):	None	Slope(%):	45	HGM:	N/A
Subregion (LRR):	X	Lat:	59.899471	Long:	-155.404175
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Tree Stratum				Dominance Test Worksheet:			
		Absolute % Cover	Dominant Species?	Indicator Status	Number of Dominant Species		
1.					That Are OBL, FACW, or FAC: 4 (A)		
2.					Total Number of Dominant		
3.					Species Across All Strata: 5 (B)		
4.					Percent of Dominant Species		
Total Cover:					That Are OBL, FACW, or FAC: 80 (A/B)		
50% of total cover:		0	20% of total cover:		0		
Sapling/Shrub Stratum				Prevalence Index worksheet:			
					Total % Cover of:		Multiply by:
1.	Alnus sinuata	15	Yes	FAC	OBL species	x1=	
2.	Salix pulchra	10	Yes	FAC	FACW species	45 x2=	90
3.	Spiraea stevenii	2	No	FACU	FAC species	106 x3=	318
4.					FACU species	62 x4=	248
5.					UPL species	x5=	
6.					Column Totals:	213 (A)	656 (B)
Total Cover:		27			Prevalence Index = B/A= 3.08		
50% of total cover:		13.5	20% of total cover:		5.4		
Herb Stratum				Hydrophytic Vegetation Indicators:			
1.	Calamagrostis canadensis	55	Yes	FAC	X	Dominance Test is >50%	
2.	Gymnocarpium dryopteris	40	Yes	FACU		Prevalence Index is ≤3.0	
3.	Sanguisorba canadensis	40	Yes	FACW		Morphological Adaptations <sup>1</sup> (Provide	
4.	Carex podocarpa	15	No	FAC		data in Remarks or on a separate sheet)	
5.	Veratrum viride	5	No	FAC		Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
6.	Chamaenerion angustifolium	5	No	FACU			
7.	Dryopteris expansa	5	No	FACU			
8.	Geranium erianthum	5	No	FACU			
9.	Rubus stellatus	3	No	FAC			
10.	Viola langsdorffii	3	No	FACW			
Total Cover:		186			*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.		
50% of total cover:		93	20% of total cover:		37.2		
Plot size (radius, or length x width) 1/10 acre			% Bare Ground		0		
% Cover of Wetland Bryophytes 0			% Cover of Bryophytes <sup>2</sup>				
(Where applicable)							
Hydrophytic Vegetation Present?				Yes X No			

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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-4							N/A		hor:Oe
4-5	7.5YR2.5/2	100					No	Loam	hor:A
5-20	7.5YR3/3	100					No	Sandy Loam	hor:B *4

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Remarks: No hydric soil indicators observed. \*4: 5% medium gravel, 25% coarse gravel.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Dry pit. No primary hydrology indicators observed. Extremely steep slope on both sides of valley.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR3141\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Angelica lucida	2	No	FACU
Streptopus amplexifolius	2	No	FACU
Aconitum delphiniifolium	1	No	FAC
Fritillaria camschatcensis	1	No	FAC
Rhodiola integrifolia	1	No	FAC
Trientalis europaea	1	No	FACU
Eriqeron peregrinus	1	No	FACW
Senecio trianqularis	1	No	FACW

Additional Reference Data: Photos

HDR3141\_18



Photo Name: Photo\_180713102325



Photo Name: Photo\_180713102303



## Additional Reference Data: Photos

HDR3141\_18



Photo Name: Photo\_180713102250



Photo Name: Photo\_180713102410



Photo Name: Photo\_180713102346



**Photo Name:** Photo\_180713102318



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 7/13/2018  
 Applicant/Owner: PLP Sampling Point: HDR3142\_18  
 Investigators: MS AH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 3 HGM: Slope  
 Subregion (LRR): X Lat: 59.900295 Long: -155.409698 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1C

Vegetation Type: Closed Willow Low Shrub (CWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes      No X (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>			
Remarks: <u>Wetter than normal antecedent precipitation</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>	
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>3</u> (B)	
Total Cover: <u>    </u>				Percent of Dominant Species	
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
20% of total cover: <u>0</u>					
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>	
1. <u>Salix pulchra</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>    </u> Multiply by: <u>    </u>	
2. <u>Spiraea stevenii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	OBL species <u>3</u> x1= <u>3</u>	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	FACW species <u>20</u> x2= <u>40</u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	FAC species <u>205</u> x3= <u>615</u>	
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	FACU species <u>15</u> x4= <u>60</u>	
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	UPL species <u>    </u> x5= <u>    </u>	
Total Cover: <u>82</u>				Column Totals: <u>243</u> (A) <u>718</u> (B)	
50% of total cover: <u>41</u>				Prevalence Index = B/A= <u>2.95</u>	
20% of total cover: <u>16.4</u>					
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>	
1. <u>Calamagrostis canadensis</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%	
2. <u>Equisetum arvense</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0	
3. <u>Sanguisorba canadensis</u>	<u>15</u>	<u>No</u>	<u>FACW</u>	Morphological Adaptations <sup>1</sup> (Provide	
4. <u>Dryopteris expansa</u>	<u>7</u>	<u>No</u>	<u>FACU</u>	data in Remarks or on a separate sheet)	
5. <u>Rubus stellatus</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
6. <u>Viola langsdorffii</u>	<u>5</u>	<u>No</u>	<u>FACW</u>		
7. <u>Gymnocarpium dryopteris</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology	
8. <u>Comarum palustre</u>	<u>3</u>	<u>No</u>	<u>OBL</u>	must be present, unless disturbed or problematic.	
9. <u>Chamaenerion angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>		
10. <u>Trientalis europaea</u>	<u>1</u>	<u>No</u>	<u>FACU</u>		
Total Cover: <u>161</u>				<b>Hydrophytic Vegetation Present?</b>	
50% of total cover: <u>80.5</u>					
20% of total cover: <u>32.2</u>					
Plot size (radius, or length x width) <u>1/10 acre</u>				Yes <u>X</u> No <u>    </u>	
% Cover of Wetland Bryophytes <u>0</u>					
(Where applicable)					
Remarks: <u>Water 2%.</u>					

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-3							N/A		hor:Oe
3-6	10YR2/1	100					N/A	Loam	hor:A *3
6-8	10YR2.5/1	95	2.5YR3/6	5	C	PL	Yes	Loam	hor:B
8-11							Yes		hor:Oa Buried.
11-18	2.5Y3/1	85	5YR3/4	15	C	PL	N/A	Sandy Loam	hor:B 25% coarse gravel.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☐ Histosol or Histel (A1)

☐ Histic Epipedon (A2)

☒ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☐ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder

☐ Underlying Layer

☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  
Type: None  
Depth (inches): N/A  
Field Drainage Class: SPD - Somewhat Poorly Drained

**Hydric Soil Present?**    Yes ☐ No ☒

Remarks: H2S at 11".    \*3: 0.5 inch seam of medium sand at 5".

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  

☒ Surface Water (A1)

☒ High Water Table (A2)

☒ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☒ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☒ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**  

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☒ Oxidized Rhizospheres along Living Roots (C3)

☒ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☐ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☐ FAC-Neutral Test (D5)

**Field Observations:**  
Surface Water Present?    Yes ☒ No ☐    Depth (inches): 12.0  
Water Table Present?    Yes ☒ No ☐    Depth (inches): 9.0  
Saturation Present?    Yes ☒ No ☐    Depth (inches): 0.0  
(includes capillary fringe)

**Wetland Hydrology Present?**    Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Water pooled in small valleys.

Geomorphic Position:

## Additional Reference Data: Photos

HDR3142\_18



**Photo Name:** Photo\_180713112750



**Photo Name:** Photo\_180713112738



**Photo Name:** Photo\_180713112743





Photo Name: Photo\_180713112730



Photo Name: Photo\_180713112823



Photo Name: Photo\_180713112808

Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	7/13/2018
Applicant/Owner:	PLP			Sampling Point:	HDR3144_18
Investigators:	MS AH	Landform (hillslope, terrace, etc.):	Hillslope		
Local Relief (concave, convex, none):	None	Slope(%):	4	HGM:	N/A
Subregion (LRR):	X	Lat:	59.902031	Long:	-155.415512
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>      </u> X
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			

Tree Stratum				Dominance Test Worksheet:			
		Absolute % Cover	Dominant Species?	Indicator Status	Number of Dominant Species		
1.					That Are OBL, FACW, or FAC: 4 (A)		
2.					Total Number of Dominant		
3.					Species Across All Strata: 4 (B)		
4.					Percent of Dominant Species		
Total Cover:					That Are OBL, FACW, or FAC: 100 (A/B)		
50% of total cover:		0	20% of total cover:		0		
Sapling/Shrub Stratum				Prevalence Index worksheet:			
					Total % Cover of:		Multiply by:
1.	Salix pulchra	80	Yes	FAC	OBL species	x1=	
2.	Spiraea stevenii	10	No	FACU	FACW species	39 x2=	78
3.	Dryas drummondii	2	No	FACU	FAC species	195 x3=	585
4.					FACU species	22 x4=	88
5.					UPL species	x5=	
6.					Column Totals:	256 (A)	751 (B)
Total Cover:		92	20% of total cover:		18.4		
50% of total cover:		46	20% of total cover:		18.4		
Herb Stratum				Hydrophytic Vegetation Indicators:			
1.	Calamagrostis canadensis	55	Yes	FAC	X	Dominance Test is >50%	
2.	Equisetum arvense	40	Yes	FAC	X	Prevalence Index is ≤3.0	
3.	Sanguisorba canadensis	35	Yes	FACW		Morphological Adaptations <sup>1</sup> (Provide	
4.	Anemone richardsonii	7	No	FAC		data in Remarks or on a separate sheet)	
5.	Chamaenerion angustifolium	7	No	FACU		Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
6.	Rubus stellatus	5	No	FAC			
7.	Carex podocarpa	3	No	FAC			
8.	Petasites frigidus s.l.	2	No	FACW			
9.	Viola langsdorffii	2	No	FACW			
10.	Aconitum delphiniifolium	1	No	FAC			
Total Cover:		164	20% of total cover:		32.8		
50% of total cover:		82	20% of total cover:		32.8		
Plot size (radius, or length x width) 1/10 acre				% Bare Ground 0			
% Cover of Wetland Bryophytes 0				% Cover of Bryophytes 25			
(Where applicable)							
				Hydrophytic Vegetation Present? Yes X No			

Remarks:
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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-4							N/A		hor:Oe
4-10	5YR2.5/1	100					No	Loam	hor:A 10% cobble and 15% gravel.
10-13	10YR4/2	95	5YR3/3	5	C	M	No	Sandy Clay Loam	hor:B 10% cobble and 15% gravel.
13-18	5YR2.5/2	100					No	Loamy Sand	hor:B/C 10% cobble and 15% gravel.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:

☐ Histosol or Histel (A1)

☐ Histic Epipedon (A2)

☐ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☐ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils<sup>3</sup>:

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder

☐ Underlying Layer

☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

Restrictive Layer (if present):

Type: None

Depth (inches): N/A

Field Drainage Class: MWD - Moderately Well Drained

Hydric Soil Present?

Yes ☐ No ☒ X

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

☐ Surface Water (A1)

☒ High Water Table (A2)

☒ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☐ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☐ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☐ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?

Yes ☐ No ☒ X

Depth (inches):

Water Table Present?

Yes ☒ No ☐

Depth (inches): 6.0

Saturation Present?

Yes ☒ No ☐

Depth (inches): 3.0

(includes capillary fringe)

Wetland Hydrology Present?

Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
High antecedent precipitation.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

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Herb	Absolute % Cover	Dominant Species?	Indicator Status
Micranthes nelsoniana	1	No	FAC
Pyrola minor	1	No	FAC
Rhodiola integrifolia	1	No	FAC
Valeriana capitata	1	No	FAC
Angelica lucida	1	No	FACU
Streptopus amplexifolius	1	No	FACU
Trientalis europaea	1	No	FACU

Additional Reference Data: Photos

HDR3144\_18



Photo Name: Photo\_180713133529



Photo Name: Photo\_180713133548

## Additional Reference Data: Photos

HDR3144\_18



**Photo Name:** Photo\_180713133432



**Photo Name:** Photo\_180713133424



**Photo Name:** Photo\_180713133415



**Photo Name:** Photo\_180713133437



Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	7/13/2018
Applicant/Owner:	PLP			Sampling Point:	HDR3147_18
Investigators:	MS AH	Landform (hillslope, terrace, etc.):	Floodplain		
Local Relief (concave, convex, none):	None	Slope(%):	1	HGM:	Riverine
Subregion (LRR):	X	Lat:	59.903610	Long:	-155.416916
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	PSS1/EM1C		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ X \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.) \_\_\_\_\_

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>    X    </u>	No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>			

Tree Stratum				Dominance Test Worksheet:			
Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Number of Dominant Species		
1.					That Are OBL, FACW, or FAC: 3 (A)		
2.					Total Number of Dominant		
3.					Species Across All Strata: 3 (B)		
4.					Percent of Dominant Species		
Total Cover:					That Are OBL, FACW, or FAC: 100 (A/B)		
50% of total cover:		0	20% of total cover:		0		
Sapling/Shrub Stratum				Prevalence Index worksheet:			
Sapling/Shrub Stratum					Total % Cover of: Multiply by:		
1.	Salix pulchra	65	Yes	FAC	OBL species	x1=	
2.	Alnus sinuata	2	No	FAC	FACW species	19 x2=	38
3.					FAC species	166 x3=	498
4.					FACU species	20 x4=	80
5.					UPL species	x5=	
6.					Column Totals:	205 (A)	616 (B)
Total Cover:		67	20% of total cover:		13.4	Prevalence Index = B/A= 3.00	
50% of total cover:		33.5					
Herb Stratum				Hydrophytic Vegetation Indicators:			
1.	Calamagrostis canadensis	60	Yes	FAC	X	Dominance Test is >50%	
2.	Equisetum arvense	30	Yes	FAC	X	Prevalence Index is ≤3.0	
3.	Sanguisorba canadensis	10	No	FACW		Morphological Adaptations <sup>1</sup> (Provide	
4.	Rubus stellatus	6	No	FAC		data in Remarks or on a separate sheet)	
5.	Angelica lucida	6	No	FACU		Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
6.	Petasites frigidus s.l.	6	No	FACW			
7.	Dryopteris expansa	5	No	FACU			
8.	Chamaenerion angustifolium	3	No	FACU			
9.	Geranium erianthum	3	No	FACU			
10.	Trientalis europaea	3	No	FACU			
Total Cover:		138	20% of total cover:		27.6		
50% of total cover:		69					
Plot size (radius, or length x width) 1/10 acre				% Bare Ground 0			
% Cover of Wetland Bryophytes 0		% Cover of Bryophytes 45					
(Where applicable)							
Hydrophytic Vegetation Present?				Yes X No			

Remarks:
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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-2							N/A		hor:Oe
2-9	7.5YR3/2	100					No	Silty Clay Loam	hor:A
9-18	2.5Y4/2	80	5YR4/4	20	C	PL	No	Silty Clay Loam	hor:B1
18-20	2.5Y4/2	70	5YR5/8	30	C	M	No	Sandy Clay Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

<b>Hydric Soil Indicators:</b>	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: <u>None</u>	
Depth (inches): <u>N/A</u>	
Field Drainage Class: <u>SPD - Somewhat Poorly Drained</u>	

Remarks:

HYDROLOGY

<b>Wetland Hydrology Indicators:</b>	<b>Secondary Indicators (2 or more required)</b>	
Primary Indicators (minimum of one required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>                    </u>		
Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>          13.0          </u>		
Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>          11.0          </u>		
(includes capillary fringe)		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR3147\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Viola lanqsdorffii	2	No	FACW
Aconitum delphiniifolium	1	No	FAC
Polemonium acutiflorum	1	No	FAC
Valeriana capitata	1	No	FAC
Galium trifidum	1	No	FACW

Additional Reference Data: Photos

HDR3147\_18



Photo Name: Photo\_180713152932



Photo Name: Photo\_180713153012



## Additional Reference Data: Photos

HDR3147\_18



**Photo Name:** Photo\_180713152952



**Photo Name:** Photo\_180713152204



**Photo Name:** Photo\_180713152215

## Additional Reference Data: Photos

HDR3147\_18



**Photo Name:** Photo\_180713152222



**Photo Name:** Photo\_180713152241

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/14/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR4000_18</u>	
Investigators: <u>AG GM</u>	Landform (hillslope, terrace, etc.): <u>Terrace</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): <u>0</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.898514</u>	Long: <u>-155.423721</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: <u>Upland terrace above stream. Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>2</u> <u>Multiply by:</u>
2. <u>Salix barclayi</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	OBL species <u>2</u> x1= <u>2</u>
3. <u>Salix alaxensis</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FACW species <u>15</u> x2= <u>30</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>113</u> x3= <u>339</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>18</u> x4= <u>72</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>48</u>				Column Totals: <u>148</u> (A) <u>443</u> (B)
50% of total cover: <u>24</u>				<u>Prevalence Index = B/A=</u> <u>2.99</u>
20% of total cover: <u>9.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>18</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Sanguisorba canadensis</u>	<u>15</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Chamaenerion angustifolium</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Rubus arcticus s.l.</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Angelica lucida</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
7. <u>Geranium erianthum</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Viola sp.</u>	<u>3</u>	<u>No</u>	<u>N/A</u>	must be present, unless disturbed or problematic.
9. <u>Comarum palustre</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>103</u>				
50% of total cover: <u>51.5</u>				
20% of total cover: <u>20.6</u>				
Plot size (radius, or length x width) <u>20 x 60 feet</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <sup>5</sup> <u>      </u>				<b>Present?</b>
(Where applicable)				

Remarks:

Plot 20'x60', limited to terrace. Trace: Ach mil, Pol acu, Tri eur, Aco del, Gal tri.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi Mostly derived from moss
2-14	7.5YR 3/3	92	7.5YR 4/4	8	CS	M		Fine Sandy Loam	hor:B Faint redox
14-18	7.5YR 3/3	95	7.5YR 4/4	5	CS	M		Fine Sandy Loam	hor:B2 Gravelly FSL

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: _____	
Depth (inches): _____	
Field Drainage Class: WD - Well Drained	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Terrace is 4 feet above stream OHWM. Trickle flow at slope break at upper edge of terrace about 10 feet from pit.

Geomorphic Position: Terrace



Photo Name: Photo\_180814094714



Photo Name: Photo\_180814094649



Photo Name: Photo\_180814094703



## Additional Reference Data: Photos

HDR4000\_18



Photo Name: Photo\_180814094728



Photo Name: Photo\_180814094735



Photo Name: Photo\_180814094721



Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	8/14/2018
Applicant/Owner:	PLP			Sampling Point:	HDR4002_18
Investigators:	AG GM	Landform (hillslope, terrace, etc.):	Floodplain		
Local Relief (concave, convex, none):	None	Slope(%):	0	HGM:	Riverine
Subregion (LRR):	X	Lat:	59.898560	Long:	-155.423508
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	PEM1C		

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No   X   (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes   X   No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			

				<b>Dominance Test Worksheet:</b>			
<u><b>Tree Stratum</b></u>		Absolute % Cover	Dominant Species?	Indicator Status	Number of Dominant Species		
1.					That Are OBL, FACW, or FAC:      2      (A)		
2.					Total Number of Dominant		
3.					Species Across All Strata:      2      (B)		
4.					Percent of Dominant Species		
Total Cover:					That Are OBL, FACW, or FAC:      100      (A/B)		
50% of total cover:		0	20% of total cover:		0		
<u><b>Sapling/Shrub Stratum</b></u>							
1.	Salix pulchra	10	Yes	FAC	Total % Cover of:      Multiply by:		
2.					OBL species	1	x1= 1
3.					FACW species	3	x2= 6
4.					FAC species	106	x3= 318
5.					FACU species		x4=
6.					UPL species		x5=
Total Cover:		10			Column Totals:	110 (A)	325 (B)
50% of total cover:		5	20% of total cover:		2		
<u><b>Herb Stratum</b></u>							
1.	Calamagrostis canadensis	90	Yes	FAC	X	Dominance Test is >50%	
2.	Equisetum arvense	5	No	FAC	X	Prevalence Index is ≤3.0	
3.	Carex canescens	2	No	FACW		Morphological Adaptations <sup>1</sup> (Provide	
4.	Epilobium ciliatum	1	No	FAC		data in Remarks or on a separate sheet)	
5.	Ranunculus gmelinii	1	No	FACW		Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
6.	Comarum palustre	1	No	OBL			
7.							
8.							
9.							
10.							
Total Cover:		100					
50% of total cover:		50	20% of total cover:		20		
Plot size (radius, or length x width) 20x60 feet			% Bare Ground		0		
% Cover of Wetland Bryophytes 65			% Cover of Bryophytes 65				
(Where applicable)							
<b>Hydrophytic Vegetation Present?</b>							
Yes    X    No    _____							

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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-5									hor:Oe
5-6	10YR 3/3	100					Yes	Fine Sandy Loam	hor:B *3
6-7							Yes		hor:Oe
7-14	2.5Y 4/2	80	7.5YR 3/4	15	CS	M	Yes	Sandy Loam	hor:B Inclusions of coarse sand
7-14			7.5YR 3/4	5	C		Yes	Sandy Loam	hor:B Inclusions of coarse sand
14-17	5Y 4/2	90	7.5YR 4/4	10	C	PL	Yes	Very Fine Sandy	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

Restrictive Layer (if present):	
Type: _____	
Depth (inches): _____	
Field Drainage Class: SPD - Somewhat Poorly Drained	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Remarks: H2S at 6 inches \*3: High organic content, many fine roots

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	<input type="checkbox"/> Water-stained Leaves (B9)
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 1.0	
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 4.0	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 0.0 (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Standing water at 1 inch over 20% of plot

Geomorphic Position: Floodplain

## Additional Reference Data: Photos

HDR4002\_18



**Photo Name:** Photo\_180814103146



**Photo Name:** Photo\_180814103200



**Photo Name:** Photo\_180814103215



## Additional Reference Data: Photos

HDR4002\_18



**Photo Name:** Photo\_180814103154



**Photo Name:** Photo\_180814103114



**Photo Name:** Photo\_180814103208

Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	8/14/2018
Applicant/Owner:	PLP			Sampling Point:	HDR4003_18
Investigators:	AG GM	Landform (hillslope, terrace, etc.):	Terrace		
Local Relief (concave, convex, none):	Convex	Slope(%):	6	HGM:	Slope
Subregion (LRR):	X	Lat:	59.899448	Long:	-155.421967
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	PSS1C		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.) \_\_\_\_\_

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>			

Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
Total Cover:				
50% of total cover:		0	20% of total cover:	0
Sapling/Shrub Stratum				
1.	Salix barclayi	40	Yes	FAC
2.	Salix pulchra	35	Yes	FAC
3.				
4.				
5.				
6.				
Total Cover:		75		
50% of total cover:		37.5	20% of total cover:	15
Herb Stratum				
1.	Calamagrostis canadensis	20	Yes	FAC
2.	Sanguisorba canadensis	15	Yes	FACW
3.	Equisetum arvense	8	Yes	FAC
4.	Sedum rosea ssp. integrifolium	7	No	FAC
5.	Rubus arcticus s.l.	5	No	FAC
6.	Geranium erianthum	5	No	FACU
7.	Aconitum delphiniifolium	3	No	FAC
8.	Anemone richardsonii	3	No	FAC
9.	Iris setosa	3	No	FAC
10.	Viola palustris	3	No	FAC
Total Cover:		84		
50% of total cover:		42	20% of total cover:	16.8
Plot size (radius, or length x width)		1/10 acre	% Bare Ground	0
% Cover of Wetland Bryophytes			% Cover of Bryophytes	
(Where applicable)				

**Dominance Test Worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

Total % Cover of: Multiply by:

OBL species	x1=	
FACW species	18 x2=	36
FAC species	129 x3=	387
FACU species	10 x4=	40
UPL species	x5=	
Column Totals:	157 (A)	463 (B)

Prevalence Index = B/A= 2.95

**Hydrophytic Vegetation Indicators:**

X Dominance Test is >50%

X Prevalence Index is ≤3.0

Morphological Adaptations<sup>1</sup> (Provide data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?**

Yes X No

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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oe Variable boundary 2-5" bgs
3-5	7.5YR 2.5/2	100					Yes	Silt Loam	hor:B Gravelly
5-12	7.5YR 2.5/2	100					Yes	Fine Sandy Loam	hor:B Cobble refusal

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input checked="" type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: _____	
Depth (inches): _____	
Field Drainage Class: SPD - Somewhat Poorly Drained	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____

Remarks: Positive alpha alpha in mineral layers.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		
Surface Water Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): 1.0	
Water Table Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): 6.0	
Saturation Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): 0.0	
(includes capillary fringe)		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position: Floodplain



Additional Reference Data: Overflow Vegetation

HDR4003\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Chamaenerion angustifolium	3	No	FACU
Carex membranacea	3	No	FACW
Carex microchaeta	2	No	FAC
Angelica lucida	2	No	FACU
Carex sp.	2	No	N/A

Additional Reference Data: Photos

HDR4003\_18

Photo Name: Photo\_180814123533



Photo Name: Photo\_180814123456



## Additional Reference Data: Photos

HDR4003\_18



**Photo Name:** Photo\_180814123553



**Photo Name:** Photo\_180814123544



**Photo Name:** Photo\_180814123527





Photo Name: Photo\_180814123513



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/14/2018  
 Applicant/Owner: PLP Sampling Point: HDR4007\_18  
 Investigators: AG GM Landform (hillslope, terrace, etc.): Valleybottom  
 Local Relief (concave, convex, none): Convex Slope(%): 1 HGM: N/A  
 Subregion (LRR): X Lat: 59.900566 Long: -155.419693 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Above stream. Area is lumpy with standing water in lows. Pull out water with connection to stream north of point. Plot limited to upland area. Wetter than normal antecedent precipitation.

## VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index worksheet:</b>				
Total % Cover of:		Multiply by:		
OBL species	<u>      </u>	x1= <u>      </u>		
FACW species	<u>3</u>	x2= <u>6</u>		
FAC species	<u>142</u>	x3= <u>426</u>		
FACU species	<u>2</u>	x4= <u>8</u>		
UPL species	<u>      </u>	x5= <u>      </u>		
Column Totals:	<u>147</u> (A)	<u>440</u> (B)		
Prevalence Index = B/A=				<u>2.99</u>
<b>Hydrophytic Vegetation Indicators:</b>				
X	Dominance Test is >50%			
X	Prevalence Index is ≤3.0			
Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)				
Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix pulchra</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Salix alaxensis</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>50</u>				
50% of total cover: <u>25</u>				
20% of total cover: <u>10</u>				
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>90</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Angelica genuflexa</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	
3. <u>Aconitum delphinifolium</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
4. <u>Rubus arcticus s.l.</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
5. <u>Achillea millefolium s.l.</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
6. <u>Heracleum maximum</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>97</u>				
50% of total cover: <u>48.5</u>				
20% of total cover: <u>19.4</u>				
Plot size (radius, or length x width) <u>20 x 45 ft</u>				% Bare Ground <u>0</u>
% Cover of Wetland Bryophytes <u>0</u>				% Cover of Bryophytes <u>0</u>
(Where applicable)				

Remarks:  
 OWLS; plot samples vegetated/terrestrial areas only and excludes small pond and side channel leading through plot. Trace: Carex sp., Vio epi, Cha ang, Tri eur, Ste cri.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oe
3-9	10YR 4/3	100						Fine Sandy Loam	hor:B1 Inclusions of sand
9-18	10YR 5/3	92	7.5YR 3/4	8	C	RC		Fine Sandy Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
Type: _____		
Depth (inches): _____		
Field Drainage Class:    WD - Well Drained		

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches): _____		
Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches): _____		
Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Soil moist but not saturated.  
  
Geomorphic Position: Valley bottom



**Photo Name:** Photo\_180814141327



**Photo Name:** Photo\_180814141403



**Photo Name:** Photo\_180814141250



## Additional Reference Data: Photos

HDR4007\_18



**Photo Name:** Photo\_180814141315



**Photo Name:** Photo\_180814141335



**Photo Name:** Photo\_180814141345

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/14/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR4008_18</u>	
Investigators: <u>AG GM</u>	Landform (hillslope, terrace, etc.): <u>Terrace</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): <u>27</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.900784</u>	Long: <u>-155.419632</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Slope between terrace and stream. Merge with surrounding U OWLS. Wetter than normal antecedent precipitation.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>67</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Spiraea beauverdiana</u>	<u>8</u>	<u>No</u>	<u>FACU</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>10</u> x2= <u>20</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>102</u> x3= <u>306</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>34</u> x4= <u>136</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>58</u>				Column Totals: <u>146</u> (A) <u>462</u> (B)
50% of total cover: <u>29</u>				<u>Prevalence Index = B/A=</u> <u>3.16</u>
20% of total cover: <u>11.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Chamaenerion angustifolium</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index is ≤3.0
3. <u>Sanguisorba canadensis</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Equisetum arvense</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Aconitum delphinifolium</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Gymnocarpium dryopteris</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
7. <u>Achillea millefolium s.l.</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Geranium erianthum</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>88</u>				
50% of total cover: <u>44</u>				
20% of total cover: <u>17.6</u>				
Plot size (radius, or length x width) <u>20 x 40 feet</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <sup>5</sup> <u>      </u>				<b>Present?</b>
(Where applicable)				

Remarks:

Plot limited to slope within polygon 20'x 40'. Trace: Ste cri, Senecio sp., Rub arc, Pyr asa, Lup noo, Gal tri, Cor can, Sed ros ssp. integrifolium, Poa pal.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi Some hemic material
3-12	7.5YR 2.5/2	100						Silt Loam	hor:B
12-17	7.5YR 2.5/2	100						Very Fine Sandy	Large cobbles

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>
Type: _____		
Depth (inches): _____		
Field Drainage Class:    WD - Well Drained		

Remarks: 1 cobble with 6 inch intermediate diameter.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>
Surface Water Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/> Depth (inches): _____		
Water Table Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/> Depth (inches): _____		
Saturation Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Soil moist, but not saturated.

Geomorphic Position:



## Additional Reference Data: Photos

HDR4008\_18



**Photo Name:** Photo\_180814150837



**Photo Name:** Photo\_180814151004



**Photo Name:** Photo\_180814150825



## Additional Reference Data: Photos

HDR4008\_18



**Photo Name:** Photo\_180814151102



**Photo Name:** Photo\_180814151034



**Photo Name:** Photo\_180814151047

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/14/2018  
 Applicant/Owner: PLP Sampling Point: HDR4009\_18  
 Investigators: AG GM Landform (hillslope, terrace, etc.): Hillside  
 Local Relief (concave, convex, none): Concave Slope(%): 18 HGM: N/A  
 Subregion (LRR): X Lat: 59.901657 Long: -155.420700 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Low Ericaceous Shrub Tundra (LEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	

Remarks: Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Betula glandulosa</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>Empetrum nigrum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>12</u> x2= <u>24</u>
3. <u>Vaccinium uliginosum</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FAC species <u>99</u> x3= <u>297</u>
4. <u>Salix pulchra</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>6</u> x4= <u>24</u>
5. <u>Picea glauca</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>Rhododendron tomentosum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	Column Totals: <u>117</u> (A) <u>345</u> (B)
Total Cover: <u>83</u>				<u>Prevalence Index = B/A=</u> <u>2.95</u>
50% of total cover: <u>41.5</u>				
20% of total cover: <u>16.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	<u>12</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Rubus chamaemorus</u>	<u>7</u>	<u>Yes</u>	<u>FACW</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Petasites frigidus s.l.</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>34</u>				
50% of total cover: <u>17</u>				
20% of total cover: <u>6.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>      </u>				
% Cover of Wetland Bryophytes <u>      </u> % Cover of Bryophytes <u>      </u>				
(Where applicable)				

Remarks:

Trace: Arc rub, Rub arc, Ath cyc, San can, Carex sp., Pla dil, Val cap, Cha ang, Equ syl, Ver vir, Tri eur.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-4									hor:Oe
4-6									hor:Oa
6-12	10YR 4/3	100					No	Loamy Fine Sand	hor:B1 *4
12-14	10YR 4/4	100					No	Sandy Loam	hor:B2 Cobble refusal at 14

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: _____	
Depth (inches): _____	
Field Drainage Class: SPD - Somewhat Poorly Drained	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: \*4: Large angular cobbles starting at 6"

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input checked="" type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 4.0	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 3.0	
(includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Iron sheen on water in pit. Small permanently flooded depression outside plot to N  
  
Geomorphic Position: Concave terrace on hill slope

Additional Reference Data: Overflow Vegetation

HDR4009\_18

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Spiraea beauverdiana</u>	<u>1</u>	<u>No</u>	<u>FACU</u>

Additional Reference Data: Photos

HDR4009\_18



Photo Name: Photo\_180814154913



Photo Name: Photo\_180814154849



## Additional Reference Data: Photos

HDR4009\_18



**Photo Name:** Photo\_180814154937



**Photo Name:** Photo\_180814154928



**Photo Name:** Photo\_180814154919



Photo Name: Photo\_180814154840



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/15/2018  
 Applicant/Owner: PLP Sampling Point: HDR4020\_18  
 Investigators: AG GM Landform (hillslope, terrace, etc.): Valleybottom  
 Local Relief (concave, convex, none): None Slope(%): 1 HGM: Slope  
 Subregion (LRR): X Lat: 59.892933 Long: -155.431320 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PEM1B

Vegetation Type: Bluejoint Tall Grass (BTG)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Approx 3' above stream, above floodplain. Wetter than normal antecedent precipitation.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Salix barclayi</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>Salix pulchra</u>	<u>3</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>20</u> x2= <u>40</u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>106</u> x3= <u>318</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>      </u> x4= <u>      </u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>126</u> (A) <u>358</u> (B)
Total Cover: <u>8</u>				<u>Prevalence Index = B/A=</u> <u>2.84</u>
50% of total cover: <u>4</u>				
20% of total cover: <u>1.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>95</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>20</u>	<u>No</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Polemonium acutiflorum</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>118</u>				<b>Hydrophytic</b>
50% of total cover: <u>59</u>				<b>Vegetation</b>
20% of total cover: <u>23.6</u>				Yes <u>X</u> No <u>      </u>
Plot size (radius, or length x width) <u>20 x 45 feet</u>				<b>Present?</b>
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>5</u>		
(Where applicable)				

Remarks:

Plot size 20x45 feet; limited below slope break. Trace: *Viola* sp., *Ger eri*, *Sed ros* ssp. *integrifolium*, *Rum arc*.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi Grass-derived
1-5	10YR 3/2	98	7.5YR 4/4	2	CS	M	Yes	Very Fine Sandy	Many fine roots; cobbly
5-8	10YR 3/2	100					Yes	Sandy Loam	*3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input checked="" type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):		Hydric Soil Present?	Yes	<input checked="" type="checkbox"/>	No
Type:					
Depth (inches):					
Field Drainage Class:	SPD - Somewhat Poorly Drained				

Remarks: Positive reaction to a a-dipyridyl in both mineral layers => hydric soil. Cobble refusal at 8". Soil with low organic carbon content. \*3: Gravelly and cobbly; many fine roots

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/>	Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	Drainage Patterns (B10)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/>	Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/>	Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/>	Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/>	Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/>	Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/>	Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/>	FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/>	No
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):				
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):				
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):				
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
May only receive periodic overbank flooding; source is mainly groundwater from slope above; very near PUBH  
  
Geomorphic Position: Low terrace



## Additional Reference Data: Photos

HDR4020\_18



Photo Name: Photo\_180815144934



Photo Name: Photo\_180815145017



Photo Name: Photo\_180815145027





**Photo Name:** Photo\_180815145004



**Photo Name:** Photo\_180815145010



**Photo Name:** Photo\_180815144923

Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	8/15/2018
Applicant/Owner:	PLP			Sampling Point:	HDR4024_18
Investigators:	AG GM	Landform (hillslope, terrace, etc.):	Hillside		
Local Relief (concave, convex, none):	Convex	Slope(%):	16	HGM:	N/A
Subregion (LRR):	X	Lat:	59.892975	Long:	-155.431442
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If No, explain in Remarks)

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			

Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
Total Cover:				
50% of total cover:		0	20% of total cover:	0
Sapling/Shrub Stratum				
1.				
2.				
3.				
4.				
5.				
6.				
Total Cover:				
50% of total cover:		0	20% of total cover:	0
Herb Stratum				
1.	Calamagrostis canadensis	100	Yes	FAC
2.	Equisetum arvense	5	No	FAC
3.	Geranium erianthum	4	No	FACU
4.	Aconitum delphiniifolium	2	No	FAC
5.	Rubus arcticus s.l.	1	No	FAC
6.	Viola epipsila	1	No	FAC
7.	Chamaenerion angustifolium	1	No	FACU
8.	Heracleum maximum	1	No	FACU
9.				
10.				
Total Cover:		115		
50% of total cover:		57.5	20% of total cover:	23
Plot size (radius, or length x width)		20 x 20 ft	% Bare Ground	0
% Cover of Wetland Bryophytes		0	% Cover of Bryophytes	0
(Where applicable)				

### Dominance Test Worksheet:

Number of Dominant Species

That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

### Prevalence Index worksheet:

Total % Cover of: Multiply by:

OBL species	x1=	
FACW species	x2=	
FAC species	x3=	327
FACU species	x4=	24
UPL species	x5=	
Column Totals:	115 (A)	351 (B)

Prevalence Index = B/A= 3.05

### Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is ≤3.0

Morphological Adaptations<sup>1</sup> (Provide data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

### Hydrophytic Vegetation Present?

Yes X No

1625 of 1906



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-6	10YR 4/3	98	7.5YR 4/4	2	C	RC	No	Fine Sandy Loam	hor:B
6-11	10YR 4/4	80	7.5YR 4/6	20	CS	PL M	No	Fine Sandy Loam	hor:B *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____ Field Drainage Class: SPD - Somewhat Poorly Drained	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>
---	---

Remarks: Cobble refusal at 11"    \*3: Redox features in inclusions of sand

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    6.0 Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    4.0 (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
High WT may be due to recent high precip

Geomorphic Position:

## Additional Reference Data: Photos

HDR4024\_18



**Photo Name:** Photo\_180815152756



**Photo Name:** Photo\_180815152805



**Photo Name:** Photo\_180815152740



## Additional Reference Data: Photos

HDR4024\_18



**Photo Name:** Photo\_180815152651



**Photo Name:** Photo\_180815152747



**Photo Name:** Photo\_180815152718



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/16/2018  
 Applicant/Owner: PLP Sampling Point: HDR4025\_18  
 Investigators: AG GM Landform (hillslope, terrace, etc.): Bench  
 Local Relief (concave, convex, none): None Slope(%): 1 HGM: N/A  
 Subregion (LRR): X Lat: 59.893173 Long: -155.432098 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>		
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>		

Remarks: Upslope of polygon 3PP3906. Wetter than normal antecedent precipitation.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>100</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>5</u> x2= <u>10</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>140</u> x3= <u>420</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>15</u> x4= <u>60</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>100</u>				Column Totals: <u>160</u> (A) <u>490</u> (B)
50% of total cover: <u>50</u>				<u>Prevalence Index = B/A=</u> <u>3.06</u>
20% of total cover: <u>20</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Dryopteris expansa</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	Prevalence Index is ≤3.0
3. <u>Gymnocarpium dryopteris</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>60</u>				
50% of total cover: <u>30</u>				
20% of total cover: <u>12</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>5</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>10</u>				<b>Present?</b>
(Where applicable)				

Remarks:

Trace: Pet fri, Ang gen, Ane ric, Pol acu, Vio pal, Cha ang, Rub arc, Aco del.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oa Black sapric
2-7	7.5YR 3/3	88	5YR 4/4	12	C	M	No	Silt Loam	hor:Bw
7-9	10YR 3/3	88	5YR 4/4	12	C	M	No	Very Fine Sandy	hor:C1
9-18	10YR 3/3	78	5YR 3/3	10	C	M	No	Very Fine Sandy	hor:C2
9-18			5YR 4/4	12	C	M	No	Very Fine Sandy	hor:C2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

<b>Hydric Soil Indicators:</b>	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: _____	
Depth (inches): _____	
Field Drainage Class:    MWD - Moderately Well Drained	

Remarks: No hydric soil indicators.

HYDROLOGY

<b>Wetland Hydrology Indicators:</b>	<b>Secondary Indicators (2 or more required)</b>	
Primary Indicators (minimum of one required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____		
Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____		
Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____		
(includes capillary fringe)		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No stream through polygon. Some standing water (outside plot) likely due to recent high precip collecting on slight bench.

Geomorphic Position:

## Additional Reference Data: Photos

HDR4025\_18



**Photo Name:** Photo\_180815162736



**Photo Name:** Photo\_180815162805



**Photo Name:** Photo\_180815162643



## Additional Reference Data: Photos

HDR4025\_18



Photo Name: Photo\_180815162707



Photo Name: Photo\_180815162754



Photo Name: Photo\_180815162726

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/16/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR4027_18</u>	
Investigators: <u>AG GM</u>	Landform (hillslope, terrace, etc.): <u>Hillside</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): _____	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.868664</u>	Long: <u>-155.456284</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If No, explain in Remarks)

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ X \_\_\_\_\_ No \_\_\_\_\_

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>X</u>	No _____	

Remarks: 3PP point is on a small high point that is not representative of larger community, HDR plot sampled approx 50 ft to NW in willow dominated area. Wetter than normal antecedent precipitation. Slope estimated between 10-12%, based on contours.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species	
2. _____	_____	_____	_____	That Are OBL, FACW, or FAC: <u>5</u> (A)	
3. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>7</u> (B)	
4. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>71</u> (A/B)	
Total Cover: _____				<b>Prevalence Index worksheet:</b>	
50% of total cover: <u>0</u>					
20% of total cover: <u>0</u>					
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u>	
1. <u>Salix pulchra</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>3</u> x1= <u>3</u>	
2. <u>Salix barclayi</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>21</u> x2= <u>42</u>	
3. <u>Spiraea beauverdiana</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	<u>109</u> x3= <u>327</u>	
4. <u>Empetrum nigrum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>37</u> x4= <u>148</u>	
5. <u>Vaccinium uliginosum</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<u>3</u> x5= <u>15</u>	
6. _____	_____	_____	_____	Column Totals: <u>173</u> (A) <u>535</u> (B)	
Total Cover: <u>78</u>				<u>Prevalence Index = B/A=</u> <u>3.09</u>	
50% of total cover: <u>39</u>				<b>Hydrophytic Vegetation Indicators:</b>	
20% of total cover: <u>15.6</u>					
<u>Herb Stratum</u>					
1. <u>Calamagrostis canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>		<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>		Prevalence Index is ≤3.0
3. <u>Chamaenerion angustifolium</u>	<u>8</u>	<u>Yes</u>	<u>FACU</u>		Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)
4. <u>Dryopteris expansa</u>	<u>8</u>	<u>Yes</u>	<u>FACU</u>		Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>Equisetum arvense</u>	<u>7</u>	<u>Yes</u>	<u>FAC</u>		<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. <u>Aconitum delphinifolium</u>	<u>5</u>	<u>No</u>	<u>FAC</u>		
7. <u>Cornus canadensis</u>	<u>5</u>	<u>No</u>	<u>FACU</u>		
8. <u>Angelica genuflexa</u>	<u>5</u>	<u>No</u>	<u>FACW</u>		
9. <u>Rubus arcticus s.l.</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____	
10. <u>Veratrum viride</u>	<u>3</u>	<u>No</u>	<u>FAC</u>		
Total Cover: <u>98</u>					
50% of total cover: <u>49</u>					
20% of total cover: <u>19.6</u>					
Plot size (radius, or length x width) <u>1/10 acre</u>					
% Cover of Wetland Bryophytes <u>20</u>					
% Cover of Bryophytes <u>40</u>					
(Where applicable)					

Remarks: Many herb species highly interspersed. Carex sp. had no heads. Trace: Luz par, Equ sci, Sed ros ssp. integrifolium, Eri per, Ane nar, Pyr asa, Sen tri.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi Moss
1-4	10YR 2/1	100					No	Silt Loam	hor:A Much OM
4-9	10YR 3/3	100					No	Silt Loam	Gravelly, some cobbles
9-18	10YR 4/2	99	7.5YR 4/6	1	C	PL	No	Silt Loam	hor:C Very gravelly, few cobbles

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: _____	
Depth (inches): _____	
Field Drainage Class:    MWD - Moderately Well Drained	

Remarks: No hydric soil indicators. 3PP data from 2004 uses 1987 indicator “low chroma colors,” would not satisfy 2006 indicators.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?    Yes <input checked="" type="checkbox"/> No    _____    Depth (inches):    4.0	
Water Table Present?    Yes <input checked="" type="checkbox"/> No    _____    Depth (inches):    16.0	
Saturation Present?    Yes <input checked="" type="checkbox"/> No    _____    Depth (inches):    0.0 (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Many streams and seeps present at same elevation as plot across slope. Small depression with standing water 6 inches upslope of pit.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR4027\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Viola epipsila	3	No	FAC
Geranium erianthum	3	No	FACU
Lupinus nootkatensis	3	No	FACU
Petasites frigidus s.l.	3	No	FACW
Rumex arcticus	3	No	FACW
Carex sp.	3	No	N/A
Artemisia arctica	3	No	NL
Comarum palustre	3	No	OBL

Additional Reference Data: Photos

HDR4027\_18



Photo Name: Photo\_180816084833



Photo Name: Photo\_180816084640



**Photo Name:** Photo\_180816084845



**Photo Name:** Photo\_180816084629



**Photo Name:** Photo\_180816084810





Photo Name: Photo\_180816084801



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/16/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR4033_18</u>	
Investigators: <u>AG GM</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>2</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u> Lat: <u>59.869301</u>	Long: <u>-155.459579</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1B</u>	

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>Wetter than normal antecedent precipitation</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>10</u> <u>Multiply by:</u>
2. <u>Salix barclayi</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>10</u> x1= <u>10</u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>6</u> x2= <u>12</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>83</u> x3= <u>249</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>4</u> x4= <u>16</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>35</u>				Column Totals: <u>103</u> (A) <u>287</u> (B)
50% of total cover: <u>17.5</u>				<u>Prevalence Index = B/A=</u> <u>2.79</u>
20% of total cover: <u>7</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Comarum palustre</u>	<u>7</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Carex rostrata</u>	<u>3</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Rubus arcticus s.l.</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
7. <u>Aconitum delphinifolium</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Anemone narcissiflora</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	must be present, unless disturbed or problematic.
9. <u>Angelica lucida</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
10. <u>Chamaenerion angustifolium</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>68</u>				
50% of total cover: <u>34</u>				
20% of total cover: <u>13.6</u>				
Plot size (radius, or length x width) <u>20 x 45 ft</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>60</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>90</u>				<b>Present?</b>
(Where applicable)				

Remarks: Wetland mosses are mainly Sphagnum species. Trace: Spi ste, Vio epi, Lup noo, Eri ang, Sed ros ssp. integrifolium, Cor sue, Art arc, Luz mul.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi
2-5									hor:Oe
5-8									hor:Oa
8-12	10YR 3/2	95	7.5YR 3/3	5	C		N/A	Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____ Field Drainage Class: PD - Poorly Drained	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks: H2S at 6". Many cobbles starting at 6".

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Marl Deposits (B15)	
<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Dry Season Water Table (C2)	
<input type="checkbox"/> Other (Explain in Remarks)	

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    6.0 Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    2.0 (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position: Toeslope

Additional Reference Data: Overflow Vegetation

HDR4033\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Geranium erianthum	1	No	FACU
Rubus chamaemorus	1	No	FACW

Additional Reference Data: Photos

HDR4033\_18



Photo Name: Photo\_180816100318



Photo Name: Photo\_180816100252



## Additional Reference Data: Photos

HDR4033\_18



**Photo Name:** Photo\_180816100028



**Photo Name:** Photo\_180816100311



**Photo Name:** Photo\_180816100331



**Photo Name:** Photo\_180816100322

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/16/2018  
 Applicant/Owner: PLP Sampling Point: HDR4034\_18  
 Investigators: AG GM Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): Concave Slope(%): 9 HGM: N/A  
 Subregion (LRR): X Lat: 59.888363 Long: -155.401947 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: OWLS; Many curvilinear topo highs & lows; slightly concave. Wetter than normal antecedent precipitation.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index worksheet:</b>				
<u>Sapling/Shrub Stratum</u>		<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>		
1. <u>Salix pulchra</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>Empetrum nigrum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>53</u> x2= <u>106</u>
3. <u>Spiraea beauverdiana</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	FAC species <u>109</u> x3= <u>327</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>22</u> x4= <u>88</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>184</u> (A) <u>521</u> (B)
Total Cover: <u>53</u>				<u>Prevalence Index = B/A =</u> <u>2.83</u>
50% of total cover: <u>26.5</u>				
20% of total cover: <u>10.6</u>				
<b>Hydrophytic Vegetation Indicators:</b>				
<u>Herb Stratum</u>				<u>X</u> Dominance Test is >50%
1. <u>Sanguisorba canadensis</u>	<u>50</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
2. <u>Calamagrostis canadensis</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
3. <u>Veratrum viride</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
4. <u>Angelica lucida</u>	<u>7</u>	<u>No</u>	<u>FACU</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>Geranium erianthum</u>	<u>7</u>	<u>No</u>	<u>FACU</u>	
6. <u>Aconitum delphinifolium</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
7. <u>Dryopteris expansa</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Equisetum arvense</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Sedum rosea ssp. integrifolium</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
10. <u>Petasites frigidus s.l.</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	
Total Cover: <u>134</u>				
50% of total cover: <u>67</u>				
20% of total cover: <u>26.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>5</u> % Cover of Bryophytes <u>10</u>				
(Where applicable)				

Remarks:  
 More Sal pul than documented by 3PP. Carex sp. had no heads. Trace: Rub arc, Art arc, Carex sp., Ane ric, Ach mil, Ane nar, Pol acu.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A		hor:Oe Grass-derived
5-8	7.5YR2.5/2	100					No	Silt Loam	hor:B Very gravelly - angular
8-18	7.5YR2.5/2	100					No	Silt Loam	Gravelly - angular

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____ Field Drainage Class: SPD - Somewhat Poorly Drained	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
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Remarks: Both mineral layers have some decomposed organic matter and clay (somewhat sticky)

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input type="checkbox"/> X <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 9.0 Saturation Present?    Yes <input type="checkbox"/> X <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 0.0 (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> X <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	--

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Overland flow through polygon, channelized but no bed and banks. Flowing over vegetation.

Geomorphic Position: Toeslope

Additional Reference Data: Overflow Vegetation

HDR4034\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Viola sp.	3	No	N/A

Additional Reference Data: Photos

HDR4034\_18



Photo Name: Photo\_180816112504



Photo Name: Photo\_180816112424



## Additional Reference Data: Photos

HDR4034\_18



Photo Name: Photo\_180816112514



Photo Name: Photo\_180816112433



Photo Name: Photo\_180816112532





Photo Name: Photo\_180816112524

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/16/2018  
 Applicant/Owner: PLP Sampling Point: HDR4036\_18  
 Investigators: AG GM Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): None Slope(%): 5 HGM: Slope  
 Subregion (LRR): X Lat: 59.894516 Long: -155.302673 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Closed Alder – Willow Tall Shrub (CAWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>75</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Alnus sinuata</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>2</u> x2= <u>4</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>229</u> x3= <u>687</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>1</u> x4= <u>4</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>95</u>				Column Totals: <u>232</u> (A) <u>695</u> (B)
50% of total cover: <u>47.5</u>				<u>Prevalence Index = B/A=</u> <u>3.00</u>
20% of total cover: <u>19</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>85</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Athyrium cyclosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Viola epipsila</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Sanguisorba canadensis</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Polemonium acutiflorum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
7. <u>Trientalis europaea</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>137</u>				
50% of total cover: <u>68.5</u>				
20% of total cover: <u>27.4</u>				
Plot size (radius, or length x width) <u>20 x 45 ft</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>15</u>				<b>Present?</b>
(Where applicable)				

Remarks: Gnarly shrubs! Much or most of moss on woody debris, also on low-lying live shrub stems. Trace: Rub cha, Ang luc, Cha ang, Her max.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-12									hor:Oe Lots of buried woody debris
12-16	10Y 4/	90	7.5YR 5/6	10	C	PL	Yes	Sandy Clay Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.    <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils<sup>3</sup>:

☐ Histosol or Histel (A1)

☒ Histic Epipedon (A2)

☒ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☒ Alaska Gleyed (A13)

☐ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder

☐ Underlying Layer

☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

Restrictive Layer (if present):

Type:

Depth (inches):

Field Drainage Class: PD - Poorly Drained

Hydric Soil Present?

Yes

☒ X

No

Remarks: H2S at 2"

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (minimum of one required; check all that apply)

☐ Surface Water (A1)

☒ High Water Table (A2)

☒ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☒ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☒ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☐ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?

Yes

☐

No

☒ X

Water Table Present?

Yes

☒ X

No

☐

Saturation Present?

Yes

☒ X

No

☐

Depth (inches):

Depth (inches): 12.0

Depth (inches): 0.0

(includes capillary fringe)

Wetland Hydrology Present?

Yes

☒ X

No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:



## Additional Reference Data: Photos

HDR4036\_18



**Photo Name:** Photo\_180816132918



**Photo Name:** Photo\_180816132923



**Photo Name:** Photo\_180816130652

## Additional Reference Data: Photos

HDR4036\_18



**Photo Name:** Photo\_180816132900



**Photo Name:** Photo\_180816132909



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/16/2018  
 Applicant/Owner: PLP Sampling Point: HDR4038\_18  
 Investigators: AG GM Landform (hillslope, terrace, etc.): Terrace  
 Local Relief (concave, convex, none): None Slope(%): 3 HGM: N/A  
 Subregion (LRR): X Lat: 59.898445 Long: -155.292343 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Carex (DEST-C)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks: <u>DEST-C. Wetter than normal antecedent precipitation.</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Rhododendron tomentosum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix barclayi</u>	<u>12</u>	<u>No</u>	<u>FAC</u>	FACW species <u>25</u> x2= <u>50</u>
4. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>155</u> x3= <u>465</u>
5. <u>Vaccinium uliginosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>Salix pulchra</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>120</u>				Column Totals: <u>180</u> (A) <u>515</u> (B)
50% of total cover: <u>60</u>				Prevalence Index = B/A= <u>2.86</u>
20% of total cover: <u>24</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex microchaeta</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Petasites frigidus s.l.</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus chamaemorus</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>60</u>				
50% of total cover: <u>30</u>				
20% of total cover: <u>12</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>      </u>				Yes <u>X</u> No <u>      </u>
(Where applicable)				<b>Present?</b>
Remarks: Trace: And pol.				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A		hor:Oi Derived from moss & ericads
4-6							N/A		hor:Oe Derived from moss & ericads
6-10	7.5YR 4/3	15					No	Clay Loam	hor:Bw Angular gravels
6-10	7.5YR 4/6	85					No	Clay Loam	hor:Bw Angular gravels
10-12	7.5YR 4/3	70					No	Clay Loam	hor:B2 Some gravel (<15%)
10-12	7.5YR 4/6	30					No	Clay Loam	hor:B2 Some gravel (<15%)
12-18	7.5YR 4/3	100					No	Clay Loam	hor:C Few gravels

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____ Field Drainage Class: WD - Well Drained	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X
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Remarks: No indicators present.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary indicators of hydrology.

Geomorphic Position:



**Photo Name:** Photo\_180816150158



**Photo Name:** Photo\_180816150122



**Photo Name:** Photo\_180816150043



## Additional Reference Data: Photos

HDR4038\_18



**Photo Name:** Photo\_180816150051



**Photo Name:** Photo\_180816150144



**Photo Name:** Photo\_180816150131



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/16/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR4039_18</u>	
Investigators: <u>AG GM</u>	Landform (hillslope, terrace, etc.): <u>Bench</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>1</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.914158</u>	Long: <u>-155.303940</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Subarctic Sedge – Moss Wet Meadow (SSMWM)</u>		NWI Classification: <u>PEM1B</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: Wetter than normal antecedent precipitation		

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix fuscescens</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	<u>Total % Cover of:</u> <u>50</u> <u>Multiply by:</u>
2. <u>Vaccinium uliginosum</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	OBL species <u>50</u> x1= <u>50</u>
3. <u>Alnus sinuata</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	FACW species <u>15</u> x2= <u>30</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>22</u> x3= <u>66</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>19</u>				Column Totals: <u>87</u> (A) <u>146</u> (B)
50% of total cover: <u>9.5</u>				<u>Prevalence Index = B/A=</u> <u>1.68</u>
20% of total cover: <u>3.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Comarum palustre</u>	<u>25</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Dominance Test is >50%
2. <u>Eriophorum chamissonis s.l.</u>	<u>25</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Calamagrostis canadensis</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Equisetum arvense</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>68</u>				
50% of total cover: <u>34</u>				
20% of total cover: <u>13.6</u>				
Plot size (radius, or length x width) <u>20 x 45 ft</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>90</u>		% Cover of Bryophytes <u>90</u>		
(Where applicable)				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Remarks:

SSMWM; nearly all of moss is Sphagnum sp. - pacificum? Trace: Spi ste, Bet nan, Pla dil.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-16									hor:Oi

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):		Hydric Soil Present?	Yes	<input checked="" type="checkbox"/> X	No
Type:					
Depth (inches):					
Field Drainage Class:	VPD - Very Poorly Drained				

Remarks: H2S at 8"

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:									
Surface Water Present?	Yes	<u>      </u>	No	<u>  X  </u>	Depth (inches):	<u>                                </u>			
Water Table Present?	Yes	<u>  X  </u>	No	<u>      </u>	Depth (inches):	<u>          3.0          </u>			
Saturation Present?	Yes	<u>  X  </u>	No	<u>      </u>	Depth (inches):	<u>          0.0          </u>			
(includes capillary fringe)									
					Wetland Hydrology Present?      Yes <u>  X  </u> No <u>      </u>				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position: Bench on hillside.



**Photo Name:** Photo\_180816153537



**Photo Name:** Photo\_180816153443



**Photo Name:** Photo\_180816153553



## Additional Reference Data: Photos

HDR4039\_18



**Photo Name:** Photo\_180816153545



**Photo Name:** Photo\_180816153602



**Photo Name:** Photo\_180816153515

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/17/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR4041_18</u>	
Investigators: <u>AG GM</u>	Landform (hillslope, terrace, etc.): <u>Hillside</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): <u>6</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.913654</u>	Long: <u>-155.303329</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Bluejoint Tall Grass (BTG)</u>		NWI Classification: <u>PEM1B</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	
Remarks: <u>Wetter than normal antecedent precipitation</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>      </u>			<b>Prevalence Index worksheet:</b> Total % Cover of: <u>      </u> Multiply by: <u>      </u> OBL species <u>7</u> x1= <u>7</u> FACW species <u>1</u> x2= <u>2</u> FAC species <u>118</u> x3= <u>354</u> FACU species <u>3</u> x4= <u>12</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>129</u> (A) <u>375</u> (B)  Prevalence Index = B/A= <u>2.91</u>
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix pulchra</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Salix fuscescens</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>16</u>			<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% X Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover:	<u>8</u>	20% of total cover:	<u>3.2</u>	
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>100</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Comarum palustre</u>	<u>7</u>	<u>No</u>	<u>OBL</u>	
3. <u>Equisetum arvense</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
4. <u>Chamaenerion angustifolium</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>113</u>			<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover:	<u>56.5</u>	20% of total cover:	<u>22.6</u>	
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>      </u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <sup>5</sup> <u>      </u>				
(Where applicable)				
Remarks: <u>Trace: San can.</u>				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-11							N/A		hor:Oi Peat
11-13							N/A		hor:Oe Hemic
13-18	7.5YR2.5/2	100					N/A	Silt Loam	hor:A Much OM, some gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____ Field Drainage Class: SPD - Somewhat Poorly Drained	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No    _____
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Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    7.0 Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    0.0 (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No    _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:



## Additional Reference Data: Photos

HDR4041\_18



**Photo Name:** Photo\_180816162900



**Photo Name:** Photo\_180816162908



**Photo Name:** Photo\_180816162930



## Additional Reference Data: Photos

HDR4041\_18



**Photo Name:** Photo\_180816162946



**Photo Name:** Photo\_180816162942



**Photo Name:** Photo\_180816162936

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/18/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR4051_18</u>	
Investigators: <u>AG VW</u>	Landform (hillslope, terrace, etc.): <u>Saddle</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>3</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.792225</u>	Long: <u>-155.088654</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Dwarf Birch Shrub (ODBS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: <u>Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>			20% of total cover: <u>0</u>	That Are OBL, FACW, or FAC: <u>80</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Vaccinium uliginosum</u>	30	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Betula nana</u>	25	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix pulchra</u>	15	No	FAC	FACW species <u>3</u> x2= <u>6</u>
4. <u>Dasiphora fruticosa</u>	10	No	FAC	FAC species <u>124</u> x3= <u>372</u>
5. <u>Empetrum nigrum</u>	8	No	FAC	FACU species <u>19</u> x4= <u>76</u>
6. <u>Spiraea beauverdiana</u>	3	No	FACU	UPL species <u>3</u> x5= <u>15</u>
Total Cover: <u>93</u>				Column Totals: <u>149</u> (A) <u>469</u> (B)
50% of total cover: <u>46.5</u>			20% of total cover: <u>18.6</u>	<u>Prevalence Index = B/A=</u> <u>3.15</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Iris setosa</u>	15	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Festuca altaica</u>	8	Yes	FAC	<u>      </u> Prevalence Index is ≤3.0
3. <u>Solidago multiradiata</u>	7	Yes	FACU	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Aconitum delphinifolium</u>	5	No	FAC	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Calamagrostis canadensis</u>	3	No	FAC	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Viola epipsila</u>	3	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Angelica lucida</u>	3	No	FACU	
8. <u>Galium boreale</u>	3	No	FACU	
9. <u>Geranium erianthum</u>	3	No	FACU	
10. <u>Sanguisorba canadensis</u>	3	No	FACW	
Total Cover: <u>56</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>28</u>			20% of total cover: <u>11.2</u>	
Plot size (radius, or length x width) <u>1/10 acre</u>			% Bare Ground <u>10</u>	
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>10</u>		
(Where applicable)				
Remarks: <u>Bare ground = standing water. ODBS clearing in larger CWLS area. Clearing is 50x30, plot is 20x40, excluding edge areas w more willow. Trace: Vac vit, Rub arc, Sed ros ssp. integrifolium, Art arc, Cha ang, Tha alp.</u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-5									hor:Oe
5-6	10YR 2/2	100					No	Fine Sandy Loam	hor:A
6-12	10YR 3/2	100					No	Sandy Loam	hor:B With gravels
12-18	7.5YR 2.5/3	100					No	Coarse Sandy	hor:B/C With gravels and cobbles

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
Type: _____		
Depth (inches): _____		
Field Drainage Class:    MWD - Moderately Well Drained		

Remarks: No indicators

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?    Yes <input checked="" type="checkbox"/> No    _____	Depth (inches):    3.0	
Water Table Present?    Yes <input checked="" type="checkbox"/> No    _____	Depth (inches):    0.0	
Saturation Present?    Yes <input checked="" type="checkbox"/> No    _____	Depth (inches):    0.0	
(includes capillary fringe)		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Standing water is about 10% of plot, up to 3 inches. Standing water and high water table due to a lot of rain.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR4051\_18

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
<u>Lagotis glauca s.l.</u>	<u>3</u>	<u>No</u>	<u>NL</u>
<b>Sapling/Shrub</b>			
<u>Rhododendron tomentosum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>

Additional Reference Data: Photos

HDR4051\_18

Photo Name: Photo\_180818081535



Photo Name: Photo\_180818081525





## Additional Reference Data: Photos

HDR4051\_18

Photo Name: Photo\_180818081451



Photo Name: Photo\_180818081338



Photo Name: Photo\_180818081508







Photo Name: Photo\_180818081316

Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	8/18/2018
Applicant/Owner:	PLP			Sampling Point:	HDR4052_18
Investigators:	AG VW	Landform (hillslope, terrace, etc.):	Saddle		
Local Relief (concave, convex, none):	None	Slope(%):	2	HGM:	N/A
Subregion (LRR):	X	Lat:	59.792496	Long:	-155.090042
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			

Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
Total Cover:				
50% of total cover:		0	20% of total cover:	0
Sapling/Shrub Stratum				
1.	Salix pulchra	80	Yes	FAC
2.				
3.				
4.				
5.				
6.				
Total Cover:		80		
50% of total cover:		40	20% of total cover:	16
Herb Stratum				
1.	Calamagrostis canadensis	40	Yes	FAC
2.	Equisetum arvense	5	No	FAC
3.	Aconitum delphiniifolium	2	No	FAC
4.	Epilobium angustifolium	2	No	FACU
5.	Geranium erianthum	1	No	FACU
6.	Sanguisorba canadensis	1	No	FACW
7.				
8.				
9.				
10.				
Total Cover:		51		
50% of total cover:		25.5	20% of total cover:	10.2
Plot size (radius, or length x width) 1/10 acre			% Bare Ground	
% Cover of Wetland Bryophytes			% Cover of Bryophytes	15
(Where applicable)				

**Dominance Test Worksheet:**

Number of Dominant Species \_\_\_\_\_

That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_

OBL species x1= \_\_\_\_\_

FACW species 1 x2= 2

FAC species 127 x3= 381

FACU species 3 x4= 12

UPL species x5= \_\_\_\_\_

Column Totals: 131 (A) 395 (B)

Prevalence Index = B/A= 3.02

**Hydrophytic Vegetation Indicators:**

X Dominance Test is >50%

Prevalence Index is ≤3.0

Morphological Adaptations<sup>1</sup> (Provide data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?**

Yes X No

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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi
2-6									hor:Oa
6-7	10YR 3/2	100					No	Silt Loam	hor:A
7-9	2.5Y 4/2	98	7.5YR 3/4	2	C		No	Sandy Clay Loam	hor:B1
9-16	10YR 4/3	100					No	Sandy Clay Loam	hor:B2 15% cobbles and gravels

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: _____	
Depth (inches): _____	
Field Drainage Class:    SPD - Somewhat Poorly Drained	

Remarks: No indicators

HYDROLOGY

Wetland Hydrology Indicators:				Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)				<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)			<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)			<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)			<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)			<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)			<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)			<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)				<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)				<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)				<input type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b>				<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Surface Water Present?	Yes	<input checked="" type="checkbox"/>	No		
Water Table Present?	Yes	<input checked="" type="checkbox"/>	No		
Saturation Present?	Yes	<input checked="" type="checkbox"/>	No		
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Very hummocky, standing water in microlows between willows and cal can hummocks, pooling on top of vegetation . Hydrology indicators may be present due to wetter than normal antecedent conditions
Geomorphic Position:



## Additional Reference Data: Photos

HDR4052\_18



**Photo Name:** Photo\_180818090358



**Photo Name:** Photo\_180818090413



**Photo Name:** Photo\_180818090441



## Additional Reference Data: Photos

HDR4052\_18

**Photo Name:** Photo\_180818090454



**Photo Name:** Photo\_180818090448



**Photo Name:** Photo\_180818090434



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/18/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR4053_18</u>	
Investigators: <u>AG VW</u>	Landform (hillslope, terrace, etc.): <u>Gulch or Gully</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>2</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.791313</u>	Long: <u>-155.094345</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Ericaceous Shrub Bog (ESB)</u>		NWI Classification: <u>PSS1/EM1C</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: Wetter than normal antecedent precipitation		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix reticulata</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>33</u> <u>Multiply by:</u>
2. <u>Vaccinium uliginosum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>33</u> x1= <u>33</u>
3. <u>Salix pulchra</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>20</u> x2= <u>40</u>
4. <u>Andromeda polifolia</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	FAC species <u>100</u> x3= <u>300</u>
5. <u>Vaccinium oxycoccos</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>Betula nana</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>71</u>				Column Totals: <u>153</u> (A) <u>373</u> (B)
50% of total cover: <u>35.5</u>				<u>Prevalence Index = B/A=</u> <u>2.44</u>
20% of total cover: <u>14.2</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Eriophorum chamissonis s.l.</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Comarum palustre</u>	<u>8</u>	<u>Yes</u>	<u>OBL</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Calamagrostis canadensis</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Parnassia palustris</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Rubus chamaemorus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
7. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Carex rariflora</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	must be present, unless disturbed or problematic.
9. <u>Carex bigelowii</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
10. <u>Iris setosa</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>82</u>				
50% of total cover: <u>41</u>				
20% of total cover: <u>16.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>      </u>				
% Cover of Wetland Bryophytes <u>80</u> % Cover of Bryophytes <u>90</u>				
(Where applicable)				
Remarks: Sphagnum sp. Trace: Ane ric, Rub ste, Pol acu.				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-9									hor:Oi
9-12									hor:Oe
12-13									hor:Oa
13-15	10YR 2/1	100					No	Fine Sandy Loam	hor:A
15-18	2.5Y 4/2	100					No	Coarse Sandy	hor:B With gravels

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____ Field Drainage Class: SPD - Somewhat Poorly Drained	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No    _____
---	---

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b> Surface Water Present?    Yes <input checked="" type="checkbox"/> No    _____    Depth (inches):    _____    3.0 Water Table Present?    Yes <input checked="" type="checkbox"/> No    _____    Depth (inches):    _____    0.0 Saturation Present?    Yes <input checked="" type="checkbox"/> No    _____    Depth (inches):    _____    0.0 (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No    _____
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Stream flowing through plot. Low gradient, mossy banks. 1' wide, 1-2' deep.  
  
Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR4053\_18

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
<u>Sedum rosea ssp. integrifolium</u>	<u>3</u>	<u>No</u>	<u>FAC</u>
<b>Sapling/Shrub</b>			
<u>Dasiphora fruticosa</u>	<u>3</u>	<u>No</u>	<u>FAC</u>

Additional Reference Data: Photos

HDR4053\_18



Photo Name: Photo\_180818101315



Photo Name: Photo\_180818101235



## Additional Reference Data: Photos

HDR4053\_18



**Photo Name:** Photo\_180818101608



**Photo Name:** Photo\_180818101529



**Photo Name:** Photo\_180818101626



## Additional Reference Data: Photos

HDR4053\_18



**Photo Name:** Photo\_180818101509

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/18/2018  
 Applicant/Owner: PLP Sampling Point: HDR4054\_18  
 Investigators: AG VW Landform (hillslope, terrace, etc.): Gulch or Gully  
 Local Relief (concave, convex, none): Concave Slope(%): 5 HGM: Slope  
 Subregion (LRR): X Lat: 59.791397 Long: -155.094559 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Salix barclayi</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Alnus sinuata</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>20</u> x2= <u>40</u>
4. <u>Spiraea beauverdiana</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	FAC species <u>148</u> x3= <u>444</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>8</u> x4= <u>32</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>88</u>				Column Totals: <u>176</u> (A) <u>516</u> (B)
50% of total cover: <u>44</u>				<u>Prevalence Index = B/A=</u> <u>2.93</u>
20% of total cover: <u>17.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Anemone richardsonii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Dryopteris expansa</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Rubus arcticus s.l.</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>88</u>				
50% of total cover: <u>44</u>				
20% of total cover: <u>17.6</u>				
Plot size (radius, or length x width) <u>20x20 feet</u>				<b>Hydrophytic</b>
% Bare Ground <u>      </u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>      </u>				Yes <u>X</u> No <u>      </u>
(Where applicable)				<b>Present?</b>

Remarks:

Plot 20x20 feet. Trace: Vio epi, Lyc ann, Pyr asa, Iri set, Pol acu, Ger eri, Cha ang.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi
2-8									hor:Oa
8-16	10YR 4/2	98	10YR 6/8	2	C	M	No	Silt Loam	hor:B Cobbles starting at 8"

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: _____		
Depth (inches): _____		
Field Drainage Class:    SPD - Somewhat Poorly Drained		

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?    Yes <input checked="" type="checkbox"/> No    _____	Depth (inches):    3.0	
Water Table Present?    Yes <input checked="" type="checkbox"/> No    _____	Depth (inches):    6.0	
Saturation Present?    Yes <input checked="" type="checkbox"/> No    _____	Depth (inches):    2.0	
(includes capillary fringe)		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Stream at 4053 splits and flows on either side of plot

Geomorphic Position: Gully adjacent stream



## Additional Reference Data: Photos

HDR4054\_18



**Photo Name:** Photo\_180818105108



**Photo Name:** Photo\_180818103144



**Photo Name:** Photo\_180818105103



## Additional Reference Data: Photos

HDR4054\_18



**Photo Name:** Photo\_180818105057



**Photo Name:** Photo\_180818105051



**Photo Name:** Photo\_180818103153

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/18/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR4055_18</u>	
Investigators: <u>AG VW</u>	Landform (hillslope, terrace, etc.): <u>Gulch or Gully</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>15</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.791458</u>	Long: <u>-155.094513</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Closed Willow Tall Shrub (CWTS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: On side slope of gully, approximately 5' higher in elevation than plot 4054. Limit wetlands to bottom of gully and along stream. Wetter than normal antecedent precipitation	

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		<b>Prevalence Index worksheet:</b> Total % Cover of: <u>      </u> Multiply by: OBL species <u>      </u> x1= <u>      </u> FACW species <u>3</u> x2= <u>6</u> FAC species <u>191</u> x3= <u>573</u> FACU species <u>13</u> x4= <u>52</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>207</u> (A) <u>631</u> (B)  Prevalence Index = B/A= <u>3.05</u>
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix pulchra</u>	60	Yes	FAC	
2. <u>Salix barclayi</u>	15	No	FAC	
3. <u>Alnus sinuata</u>	10	No	FAC	
4. <u>Ribes triste</u>	3	No	FAC	
Total Cover: <u>88</u>				
50% of total cover: <u>44</u>		20% of total cover: <u>17.6</u>		<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.     <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	90	Yes	FAC	
2. <u>Equisetum arvense</u>	10	No	FAC	
3. <u>Chamaenerion angustifolium</u>	5	No	FACU	
4. <u>Dryopteris expansa</u>	5	No	FACU	
5. <u>Aconitum delphinifolium</u>	3	No	FAC	
6. <u>Angelica lucida</u>	3	No	FACU	
7. <u>Sanguisorba canadensis</u>	3	No	FACW	
8. <u>      </u>				
Total Cover: <u>119</u>				
50% of total cover: <u>59.5</u>		20% of total cover: <u>23.8</u>		
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>      </u> % Cover of Wetland Bryophytes <u>      </u> % Cover of Bryophytes <sup>5</sup> <u>      </u> (Where applicable)				

Remarks:

Trace: Tri eur, Str amp.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oe
2-6									hor:Oa Cobbles starting at 2"
6-14	10YR 4/3	100						Silt Loam	hor:B1 40% cobbles
14-17	2.5YR 5/3	98	10YR 4/6	2	C			Silt Loam	hor:B2 Gravelly, 40% cobbles

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____ Field Drainage Class: MWD - Moderately Well Drained	<b>Hydric Soil Present?</b> Yes    No <input checked="" type="checkbox"/>
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Remarks: No hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present?    Yes    No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes    No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present?    Yes    No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes    No <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No indicators of hydrology.

Geomorphic Position:

## Additional Reference Data: Photos

HDR4055\_18



**Photo Name:** Photo\_180818111719



**Photo Name:** Photo\_180818111706



**Photo Name:** Photo\_180818111619



## Additional Reference Data: Photos

HDR4055\_18



**Photo Name:** Photo\_180818111724



**Photo Name:** Photo\_180818111714



**Photo Name:** Photo\_180818111633



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/18/2018  
 Applicant/Owner: PLP Sampling Point: HDR4056\_18  
 Investigators: AG VW Landform (hillslope, terrace, etc.): Gulch or Gully  
 Local Relief (concave, convex, none): Concave Slope(%): 4 HGM: N/A  
 Subregion (LRR): X Lat: 59.791172 Long: -155.095215 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Equisetum (DEST-EQ)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks: <u>Wetter than normal antecedent precipitation</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Vaccinium uliginosum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix pulchra</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	FACW species <u>4</u> x2= <u>8</u>
4. <u>Betula nana</u>	<u>12</u>	<u>No</u>	<u>FAC</u>	FAC species <u>156</u> x3= <u>468</u>
5. <u>Rhododendron tomentosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>5</u> x4= <u>20</u>
6. <u>Vaccinium vitis-idaea</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>102</u>				Column Totals: <u>165</u> (A) <u>496</u> (B)
50% of total cover: <u>51</u>				Prevalence Index = B/A= <u>3.01</u>
20% of total cover: <u>20.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex bigelowii</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Calamagrostis canadensis</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Geocaulon lividum</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
5. <u>Rubus chamaemorus</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Cornus canadensis</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
7. <u>Arctostaphylos alpina</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Sanguisorba canadensis</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>63</u>				
50% of total cover: <u>31.5</u>				
20% of total cover: <u>12.6</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>      </u>				Yes <u>X</u> No <u>      </u>
(Where applicable)				<b>Present?</b>
Remarks:				
Trace: Art arc, Ang luc.				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5									hor:Oi
5-8	10YR 2/2	100					No	Fine Sandy Loam	hor:A
8-20	10YR 3/3	100					No	Coarse Sandy	hor:B With gravels and cobbles

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		
Type: _____		
Depth (inches): _____		
Field Drainage Class: SPD - Somewhat Poorly Drained		
	<b>Hydric Soil Present?</b>	Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: No indicators

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		
Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 5.0		
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 11.0		
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 8.0 (includes capillary fringe)		
	<b>Wetland Hydrology Present?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Standing water present in one small depression on plot.

Geomorphic Position:

## Additional Reference Data: Photos

HDR4056\_18



**Photo Name:** Photo\_180818114451



**Photo Name:** Photo\_180818114341



**Photo Name:** Photo\_180818114351



## Additional Reference Data: Photos

HDR4056\_18



**Photo Name:** Photo\_180818114442



**Photo Name:** Photo\_180818114446



**Photo Name:** Photo\_180818114435

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/18/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR4058_18</u>	
Investigators: <u>AG VW</u>	Landform (hillslope, terrace, etc.): <u>Gulch or Gully</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>3</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u> Lat: <u>59.791203</u>	Long: <u>-155.093857</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1B</u>	

Vegetation Type: Closed Willow Low Shrub (CWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: Wetter than normal antecedent precipitation	

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				<b>Prevalence Index worksheet:</b> Total % Cover of: <u>      </u> Multiply by: <u>      </u> OBL species <u>15</u> x1= <u>15</u> FACW species <u>8</u> x2= <u>16</u> FAC species <u>113</u> x3= <u>339</u> FACU species <u>      </u> x4= <u>      </u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>136</u> (A) <u>370</u> (B)  Prevalence Index = B/A= <u>2.72</u>
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix pulchra</u>	80	Yes	FAC	
2. <u>Salix barclayi</u>	5	No	FAC	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>85</u>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% X Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover: <u>42.5</u>		20% of total cover: <u>17</u>		
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	20	Yes	FAC	
2. <u>Comarum palustre</u>	15	Yes	OBL	
3. <u>Equisetum arvense</u>	5	No	FAC	
4. <u>Carex disperma</u>	5	No	FACW	
5. <u>Viola epipsila</u>	3	No	FAC	
6. <u>Rumex arcticus</u>	3	No	FACW	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>51</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>25.5</u>		20% of total cover: <u>10.2</u>		
Plot size (radius, or length x width) <u>20x20 feet</u> % Bare Ground <u>      </u>				
% Cover of Wetland Bryophytes <u>      </u> % Cover of Bryophytes <u>      </u>				
(Where applicable)				

Remarks:

Plot 20x20 feet; confined to gully bottom. Trace: San can, Iri set, Sed ros ssp. integrifolium, Pol acu.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-20									hor:Oi *1

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____ Field Drainage Class: PD - Poorly Drained	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No    _____
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Remarks: H2S at 8" \*1: Fine sand inclusions between 16-20"

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b> Surface Water Present?    Yes <input checked="" type="checkbox"/> No    _____    Depth (inches):    2.0 Water Table Present?    Yes <input checked="" type="checkbox"/> No    _____    Depth (inches):    6.0 Saturation Present?    Yes <input checked="" type="checkbox"/> No    _____    Depth (inches):    0.0 (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No    _____
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Surface water in stream and microlows          Geomorphic Position: Gully, adjacent to stream
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## Additional Reference Data: Photos

HDR4058\_18



**Photo Name:** Photo\_180818120027



**Photo Name:** Photo\_180818120000



**Photo Name:** Photo\_180818120014



## Additional Reference Data: Photos

HDR4058\_18



**Photo Name:** Photo\_180818120020



**Photo Name:** Photo\_180818120031



**Photo Name:** Photo\_180818115951

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Kenai Peninsula Sampling Date: 9/20/2018  
 Applicant/Owner: PLP Sampling Point: HDR427\_18  
 Investigators: VW, SH Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): None Slope(%): 10 HGM: N/A  
 Subregion (LRR): \_\_\_\_\_ Lat: 59.823029 Long: -151.826447 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Alder Tall Shrub (CATS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If No, explain in Remarks)  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is the Sampled Area within a Wetland?</b>	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No _____			
Remarks:					

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				
1. _____	_____	_____	_____	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				
50% of total cover: <u>0</u>				20% of total cover: <u>0</u>
<b>Sapling/Shrub Stratum</b>				
1. <u>Alnus sinuata</u>	<u>75</u>	<u>Yes</u>	<u>FAC</u>	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species <u>155</u> x3= <u>465</u> FACU species <u>10</u> x4= <u>40</u> UPL species _____ x5= _____ Column Totals: <u>165</u> (A) <u>505</u> (B)  Prevalence Index = B/A= <u>3.06</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
Total Cover: <u>75</u>				
50% of total cover: <u>37.5</u>				20% of total cover: <u>15</u>
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____
2. <u>Equisetum arvense</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	
3. <u>Chamaenerion angustifolium</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
4. <u>Heracleum maximum</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>90</u>				
50% of total cover: <u>45</u>				20% of total cover: <u>18</u>
Plot size (radius, or length x width) <u>1/10 acre</u>				% Bare Ground <u>0</u>
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>0</u>		
(Where applicable)				

Remarks:  
 Some dead standing Alnus shrubs at the site.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-24	2.5Y 3/1	100					No	Sand	*1

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: _____	
Depth (inches): _____	
Field Drainage Class: WD - Well Drained	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X

Remarks: \*1: Some pebbles and cobbles - entire layer of sand

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
(includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sandy loam sediment deposits throughout site (same texture/color as soil profile). No water observed at the plot, but water was running downslope nearby (PP1).

Geomorphic Position:



**Photo Name:** Photo\_180920150010



**Photo Name:** Photo\_180920150155



**Photo Name:** Photo\_180920145956



## Additional Reference Data: Photos

HDR427\_18



**Photo Name:** Photo\_180920150123



**Photo Name:** Photo\_180920150051



**Photo Name:** Photo\_180920150104



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Kenai Peninsula Sampling Date: 9/20/2018  
 Applicant/Owner: PLP Sampling Point: HDR429\_18  
 Investigators: VW, SH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 2 HGM: N/A  
 Subregion (LRR): \_\_\_\_\_ Lat: 59.822994 Long: -151.813446 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Bluejoint Tall Grass (BTG)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If No, explain in Remarks)  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>  Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	

Remarks: \_\_\_\_\_

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. _____	_____	_____	_____	Number of Dominant Species
2. _____	_____	_____	_____	That Are OBL, FACW, or FAC: <u>1</u> (A)
3. _____	_____	_____	_____	Total Number of Dominant
4. _____	_____	_____	_____	Species Across All Strata: <u>2</u> (B)
Total Cover: _____				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>50</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Spiraea stevenii</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	Total % Cover of: _____ Multiply by: _____
2. <u>Vaccinium vitis-idaea</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	OBL species _____ x1= _____
3. _____	_____	_____	_____	FACW species _____ x2= _____
4. _____	_____	_____	_____	FAC species <u>90</u> x3= <u>270</u>
5. _____	_____	_____	_____	FACU species <u>22</u> x4= <u>88</u>
6. _____	_____	_____	_____	UPL species _____ x5= _____
Total Cover: <u>6</u>				Column Totals: <u>112</u> (A) <u>358</u> (B)
50% of total cover: <u>3</u>				Prevalence Index = B/A= <u>3.20</u>
20% of total cover: <u>1.2</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>85</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test is >50%
2. <u>Chamaenerion angustifolium</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	Prevalence Index is ≤3.0
3. <u>Equisetum sylvaticum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus acaulis</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Cornus canadensis</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Gymnocarpium dryopteris</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
7. _____	_____	_____	_____	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. _____	_____	_____	_____	must be present, unless disturbed or problematic.
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>106</u>				
50% of total cover: <u>53</u>				
20% of total cover: <u>21.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes _____ No _____ X _____
% Cover of Bryophytes <u>20</u>				<b>Present?</b>
(Where applicable)				

Remarks: \_\_\_\_\_  
 Mature white spruce near plot. Trace: San can.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							No		hor:Oi
5-8	10YR 3/4	100					No	Sandy Loam	
8-17	10YR 3/6	65					No	Fine Sandy Loam	*3
8-17	2.5Y 3/2	35					No	Fine Sandy Loam	*4
17-19	10YR 3/2	100					No		Ash type layer with charcoal
19-24	2.5Y 4/4	60	5YR 4/6	40	C	M	No	Sandy Loam	

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: _____	
Depth (inches): _____	<b>Hydric Soil Present?</b> Yes _____ No _____ X _____
Field Drainage Class:    MWD - Moderately Well Drained	

Remarks:    \*3: 2 matrix types - darker color = 35% 2.5Y3/2.    Lighter color = 65% 10YR 3/6 \*4: 2 matrix types - darker color = 35% 2.5Y3/2.    Lighter color = 65% 10YR 3/6

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present?    Yes _____ No _____ X _____    Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes _____ No _____ X _____
Water Table Present?    Yes _____ No _____ X _____    Depth (inches): _____	
Saturation Present?    Yes _____ No _____ X _____    Depth (inches): _____	
(includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No hydrology indicators observed.

Geomorphic Position: Flat with some hummocks

## Additional Reference Data: Photos

HDR429\_18



**Photo Name:** Photo\_180920115821



**Photo Name:** Photo\_180920115800



**Photo Name:** Photo\_180920115807



## Additional Reference Data: Photos

HDR429\_18



**Photo Name:** Photo\_180920115637



**Photo Name:** Photo\_180920115711



**Photo Name:** Photo\_180920115831

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Kenai Peninsula Sampling Date: 9/20/2018  
 Applicant/Owner: PLP Sampling Point: HDR430\_18  
 Investigators: VW, SH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 2 HGM: N/A  
 Subregion (LRR): \_\_\_\_\_ Lat: 59.823135 Long: -151.814880 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Bluejoint Tall Grass (BTG)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If No, explain in Remarks)  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is the Sampled Area within a Wetland?</b>	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			
Remarks:					

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				
1. _____	_____	_____	_____	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species <u>96</u> x3= <u>288</u> FACU species <u>19</u> x4= <u>76</u> UPL species _____ x5= _____ Column Totals: <u>115</u> (A) <u>364</u> (B)  Prevalence Index = B/A= <u>3.17</u>
50% of total cover: <u>0</u>			20% of total cover: <u>0</u>	
<b>Sapling/Shrub Stratum</b>				
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
Total Cover: _____				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover: <u>0</u>			20% of total cover: <u>0</u>	
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>85</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____
2. <u>Chamaenerion angustifolium</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	
3. <u>Equisetum sylvaticum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
4. <u>Gymnocarpium dryopteris</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
5. <u>Spiraea stevenii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
6. <u>Rubus acaulis</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>115</u>				
50% of total cover: <u>57.5</u>			20% of total cover: <u>23</u>	
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u> % Cover of Wetland Bryophytes _____ % Cover of Bryophytes <u>30</u> (Where applicable)				

Remarks:  
 Picea glauca are scattered nearby. A lot of downed wood (stumps and logs) at site. Spi ste added to herb stratum since shrub stratum had <5% cover.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							No	Organic	hor:Oi
3-14	2.5YR 3/2	90	2.5YR 3/4	10	C	M	No	Silt Loam	
14-24	2.5Y 4/4	95	5YR 4/6	5	C	PL M	No	Sandy Loam	hor:C With some gravels

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: _____	
Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Field Drainage Class:    MWD - Moderately Well Drained	

Remarks: 0-3in - organic,  
3-14in 2.5Y3/2 - silty loam    - redox 2.5YR3/4 in matrix 10% - toward bottom of layer,  
14-24in - 2.5Y4/4 - fine sandy loam with some gravels - redox 5YR4/6 in matrix/pore lining 5% - fainter than previous layer and toward top,  
No saturation or water present - damp soils.

HYDROLOGY

Wetland Hydrology Indicators:				Secondary Indicators (2 or more required)			
Primary Indicators (minimum of one required; check all that apply)							
<input type="checkbox"/> Surface Water (A1)				<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> High Water Table (A2)				<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			
<input type="checkbox"/> Saturation (A3)				<input type="checkbox"/> Marl Deposits (B15)			
<input type="checkbox"/> Water Marks (B1)				<input type="checkbox"/> Hydrogen Sulfide Odor (C1)			
<input type="checkbox"/> Sediment Deposits (B2)				<input type="checkbox"/> Dry Season Water Table (C2)			
<input type="checkbox"/> Drift Deposits (B3)				<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> Algal Mat or Crust (B4)							
<input type="checkbox"/> Iron Deposits (B5)							
<input type="checkbox"/> Surface Soil Cracks (B6)							
<b>Field Observations:</b>							
Surface Water Present?	Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> X	Depth (inches):			
Water Table Present?	Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> X	Depth (inches):			
Saturation Present?	Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> X	Depth (inches):			
(includes capillary fringe)							
				<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No wetland hydrology indicators observed.  
  
Geomorphic Position: Flat / hummock



## Additional Reference Data: Photos

HDR430\_18



Photo Name: Photo\_180920102734



Photo Name: Photo\_180920102857



Photo Name: Photo\_180920102906



## Additional Reference Data: Photos

HDR430\_18



**Photo Name:** Photo\_180920102843



**Photo Name:** Photo\_180920102805



**Photo Name:** Photo\_180920102850

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Kenai Peninsula Sampling Date: 9/20/2018  
 Applicant/Owner: PLP Sampling Point: HDR431\_18  
 Investigators: VW, SH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 3 HGM: N/A  
 Subregion (LRR): \_\_\_\_\_ Lat: 59.823311 Long: -151.813232 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed White Spruce Forest (CWSF)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If No, explain in Remarks)  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			
Remarks:					

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				
1. <u>Picea glauca (tree)</u>	55	Yes	FACU	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
2. <u>Betula kenaica (tree)</u>	5	No	FACU	
3. _____				
4. _____				
Total Cover: <u>60</u>				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>        </u> x1= _____ FACW species <u>6</u> x2= <u>12</u> FAC species <u>51</u> x3= <u>153</u> FACU species <u>82</u> x4= <u>328</u> UPL species <u>        </u> x5= _____ Column Totals: <u>139</u> (A) <u>493</u> (B)  Prevalence Index = B/A= <u>3.55</u>
50% of total cover: <u>30</u>		20% of total cover: <u>12</u>		
<b>Sapling/Shrub Stratum</b>				
1. <u>Betula kenaica</u>	4	Yes	FACU	<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Vaccinium vitis-idaea</u>	1	Yes	FAC	
3. _____				
4. _____				
5. _____				
6. _____				
Total Cover: <u>5</u>				<b>Hydrophytic Vegetation Present?</b> Yes _____ No _____ X _____
50% of total cover: <u>2.5</u>		20% of total cover: <u>1</u>		
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	40	Yes	FAC	<b>Hydrophytic Vegetation Present?</b> Yes _____ No _____ X _____
2. <u>Gymnocarpium dryopteris</u>	10	No	FACU	
3. <u>Equisetum arvense</u>	8	No	FAC	
4. <u>Chamaenerion angustifolium</u>	8	No	FACU	
5. <u>Sanguisorba canadensis</u>	6	No	FACW	
6. <u>Rubus acaulis</u>	2	No	FAC	
7. <u>Geranium sp.</u>	1	No	N/A	
8. _____				
9. _____				
10. _____				
Total Cover: <u>75</u>				<b>Hydrophytic Vegetation Present?</b> Yes _____ No _____ X _____
50% of total cover: <u>37.5</u>		20% of total cover: <u>15</u>		
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u> % Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>20</u> (Where applicable)				

Remarks:  
 Only a small amount of birch. Point was taken in a bit of a clearing.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							No		hor:Oi
3-7	7.5YR 3/2	85					No	Sandy Loam	*2
7-11	10YR 2/1	30					No	Silt Loam	2 soil horizons
7-11	10YR 4/6	70					No	Silt Loam	2 soil horizons
11-23	10YR 3/4	80	5YR 4/6	20	C	M	No	Sandy Loam	

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: _____	
Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>
Field Drainage Class:    MWD - Moderately Well Drained	

Remarks:    \*2: Thin layer of organics in layer

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/>
Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
(includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No hydrology indicators observed.

Geomorphic Position: Flat

## Additional Reference Data: Photos

HDR431\_18



**Photo Name:** Photo\_180920125915



**Photo Name:** Photo\_180920125756



**Photo Name:** Photo\_180920125906



## Additional Reference Data: Photos

HDR431\_18



**Photo Name:** Photo\_180920125816



**Photo Name:** Photo\_180920125859



**Photo Name:** Photo\_180920125851



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Kenai Peninsula Sampling Date: 9/20/2018  
 Applicant/Owner: PLP Sampling Point: HDR432\_18  
 Investigators: VW, SH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): Convex Slope(%): 3 HGM: N/A  
 Subregion (LRR): \_\_\_\_\_ Lat: 59.823647 Long: -151.814285 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open White Spruce Forest (OWSF)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If No, explain in Remarks)  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>  Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status		
<b>Tree Stratum</b>					
1. <u>Picea glauca (tree)</u>	45	Yes	FACU	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>20</u> (A/B)	
2. _____					
3. _____					
4. _____					
Total Cover: <u>45</u>					
50% of total cover: <u>22.5</u>		20% of total cover:	<u>9</u>		
<b>Sapling/Shrub Stratum</b>					
1. <u>Picea glauca</u>	12	Yes	FACU	<b>Prevalence Index worksheet:</b> <u>Total % Cover of:</u> <u>          </u> <u>Multiply by:</u> OBL species <u>          </u> x1= <u>          </u> FACW species <u>2</u> x2= <u>4</u> FAC species <u>62</u> x3= <u>186</u> FACU species <u>86</u> x4= <u>344</u> UPL species <u>          </u> x5= <u>          </u> Column Totals: <u>150</u> (A) <u>534</u> (B)  <i>Prevalence Index = B/A=</i> <u>3.56</u>	
2. <u>Betula kenaica</u>	4	Yes	FACU		
3. _____					
4. _____					
5. _____					
6. _____					
Total Cover: <u>16</u>					
50% of total cover: <u>8</u>		20% of total cover:	<u>3.2</u>		
<b>Herb Stratum</b>					
1. <u>Calamagrostis canadensis</u>	55	Yes	FAC		<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Chamaenerion angustifolium</u>	20	Yes	FACU		
3. <u>Equisetum arvense</u>	5	No	FAC		
4. <u>Gymnocarpium dryopteris</u>	5	No	FACU		
5. <u>Rubus acaulis</u>	2	No	FAC		
6. <u>Sanguisorba canadensis</u>	2	No	FACW		
7. _____					
8. _____					
9. _____					
Total Cover: <u>89</u>					
50% of total cover: <u>44.5</u>		20% of total cover:	<u>17.8</u>		
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u> % Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>15</u> (Where applicable)				<b>Hydrophytic Vegetation Present?</b> Yes _____ No _____ X _____	
Remarks:					

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							No		hor:Oi
3-4							No		Ash
4-5							No		hor:Oi
5-6							No		Ash
6-9	5YR 3/3	100					No	Sandy Loam	hor:B/C *5
9-21	10YR 3/3	100					No	Sandy Loam	hor:C With gravels and cobbles

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____ Field Drainage Class: MWD - Moderately Well Drained	<b>Hydric Soil Present?</b> Yes _____ No _____ X _____
---	--

Remarks:    \*5: With some black charcoal, and gravels and cobbles

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Microtopographic Relief (D4)
	<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b> Surface Water Present?    Yes _____ No _____ X _____    Depth (inches): _____ Water Table Present?    Yes _____ No _____ X _____    Depth (inches): _____ Saturation Present?    Yes _____ No _____ X _____    Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____ No _____ X _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No hydrology indicators observed.

Geomorphic Position:

## Additional Reference Data: Photos

HDR432\_18



Photo Name: Photo\_180920133440



Photo Name: Photo\_180920133322



Photo Name: Photo\_180920133344



## Additional Reference Data: Photos

HDR432\_18



**Photo Name:** Photo\_180920133430



**Photo Name:** Photo\_180920133449



**Photo Name:** Photo\_180920133424

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Kenai Peninsula Sampling Date: 9/20/2018  
 Applicant/Owner: PLP Sampling Point: HDR433\_18  
 Investigators: VW, SH Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 2 HGM: N/A  
 Subregion (LRR): \_\_\_\_\_ Lat: 59.822910 Long: -151.817337 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Alder Low Shrub (CALS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If No, explain in Remarks)  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is the Sampled Area within a Wetland?</b>  Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____	_____	_____	_____	
50% of total cover: <u>0</u>	_____	20% of total cover: <u>0</u>	_____	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species <u>125</u> x3= <u>375</u> FACU species <u>25</u> x4= <u>100</u> UPL species _____ x5= _____ Column Totals: <u>150</u> (A) <u>475</u> (B)  Prevalence Index = B/A= <u>3.17</u>
<b>Sapling/Shrub Stratum</b>				
1. <u>Alnus sinuata</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Picea glauca</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
Total Cover: <u>65</u>	_____	_____	_____	
50% of total cover: <u>32.5</u>	_____	20% of total cover: <u>13</u>	_____	
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____
1. <u>Calamagrostis canadensis</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Chamaenerion angustifolium</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	
3. <u>Equisetum sylvaticum</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	
4. <u>Athyrium americanum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
5. <u>Equisetum arvense</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
6. <u>Rubus acaulis</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>85</u>	_____	_____	_____	
50% of total cover: <u>42.5</u>	_____	20% of total cover: <u>17</u>	_____	
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u> % Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>80</u> (Where applicable)				

Remarks:  
 Plot is part of a utility corridor or ATV trail. Vegetation is low along trail with most of the Alnus and Cal can next to trail. Tall spruce in adjacent plots are 30+ feet.  
 Trace: Del gla.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2								Organic	hor:Oi
2-4	2.5Y 5/3	100						Loamy Sand	With gravel
4-17	2.5Y 4/2	100						Sand	hor:C With gravels and cobbles

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: Rock/boulders	
Depth (inches): 17	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: Cobble & gravel throughout, looks like fill; coarse, sandy, dry, no water or saturation present.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No hydro indicators observed.

Geomorphic Position:



## Additional Reference Data: Photos

HDR433\_18



Photo Name: Photo\_180920093304



Photo Name: Photo\_180920093243



Photo Name: Photo\_180920093228



## Additional Reference Data: Photos

HDR433\_18



Photo Name: Photo\_180920093313



Photo Name: Photo\_180920093255



Photo Name: Photo\_180920093206

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/14/2018  
 Applicant/Owner: PLP Sampling Point: HDR5000\_18  
 Investigators: AH, MD Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): None Slope(%): 5 HGM: Slope  
 Subregion (LRR): X Lat: 59.886147 Long: -155.448776 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks: <u>Wetter than normal antecedent precipitation</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Spiraea stevenii</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Alnus sinuata</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACW species <u>28</u> x2= <u>56</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>126</u> x3= <u>378</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>13</u> x4= <u>52</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>70</u>				Column Totals: <u>167</u> (A) <u>486</u> (B)
50% of total cover: <u>35</u>				Prevalence Index = B/A= <u>2.91</u>
20% of total cover: <u>14</u>				
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Carex bigelowii</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Equisetum arvense</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Geranium erianthum</u>	<u>7</u>	<u>No</u>	<u>FACU</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Petasites frigidus s.l.</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
7. <u>Viola langsdorffii</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Rubus stellatus</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Anemone richardsonii</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
10. <u>Valeriana capitata</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>97</u>				
50% of total cover: <u>48.5</u>				
20% of total cover: <u>19.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				<b>Hydrophytic</b>
% Cover of Wetland Bryophytes <u>25</u> % Cover of Bryophytes <u>35</u>				<b>Vegetation</b>
(Where applicable)				Yes <u>X</u> No <u>      </u>
				<b>Present?</b>
Remarks: <u>25% sphagnum. Trace lichen. Trace: Jun cas, Str amp, Sen tri, Ver vir, Pyr asa, Ped sud, Lyc ann, Ach mil, Vio epi, Rum arc, Pol acu, Rho int, Gym dry, Mic nel.</u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-7							N/A		hor:Oe H2S at 4 inches.
7-9	10YR 2/2	100					Yes	Sandy Loam	hor:A Fine sandy loam.
9-11	10YR 3/3	100					Yes	Fine Sandy Loam	hor:B1 High OM content-fibers.
11-20	2.5Y 4/3	85	5YR 4/4	10	C	PL	No	Sandy Loam	hor:B2 *5
11-20			5YR 4/6	15	C	M	No	Sandy Loam	hor:B2 *6

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b>	Yes	<u>  X  </u>	No	<u>          </u>
Type:	<u>  None  </u>					
Depth (inches):	<u>  </u>					

Remarks: H2S at 4 inches. \*5: Fine sandy loam. Pockets of medium sand. Some organic fibers. \*6: Fine sandy loam. Pockets of medium sand. Some organic fibers.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:						Wetland Hydrology Present?	Yes	<u>  X  </u>	No	<u>          </u>	
Surface Water Present?	Yes	<u>  X  </u>	No	<u>          </u>	Depth (inches):						<u>      3.0      </u>
Water Table Present?	Yes	<u>  X  </u>	No	<u>          </u>	Depth (inches):						<u>      0.0      </u>
Saturation Present?	Yes	<u>  X  </u>	No	<u>          </u>	Depth (inches):						<u>      0.0      </u>
(includes capillary fringe)											

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Alpha-alpha results positive within top 12 inches. Conditions wetter than normal due to high antecedent precipitation and rain the previous three days. Little drainage features approximately 6-20 inches wide every 10-15 ft; appear to be result of recent rain/overland flow; lack stream characteristics. Perennial stream runs through plot (stream crossing points 5001 and 5003).  
  
Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR5000\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Chamaenerion angustifolium	2	No	FACU
Rubus chamaemorus	2	No	FACW
Aconitum delphiniifolium	1	No	FAC
Trientalis europaea	1	No	FACU
Eriqeron peregrinus	1	No	FACW

Additional Reference Data: Photos

HDR5000\_18

Photo Name: Photo\_180814101849



Photo Name: Photo\_180814101819





Photo Name: Photo\_180814101841



Photo Name: Photo\_180814101904



Photo Name: Photo\_180814101833







Photo Name: Photo\_180814101921

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/14/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR5002_18</u>	
Investigators: <u>AH, MD</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>5</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u> Lat: <u>59.886246</u>	Long: <u>-155.449432</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1B</u>	

Vegetation Type: Open Alder – Willow Tall Shrub (OAWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		

Remarks: Wetter than normal conditions due to high antecedent precipitation and recent rain.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>11</u> <u>Multiply by:</u>
2. <u>Alnus sinuata</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>11</u> x1= <u>11</u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>5</u> x2= <u>10</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>141</u> x3= <u>423</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>3</u> x4= <u>12</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>85</u>				Column Totals: <u>160</u> (A) <u>456</u> (B)
50% of total cover: <u>42.5</u>				<u>Prevalence Index = B/A=</u> <u>2.85</u>
20% of total cover: <u>17</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Comarum palustre</u>	<u>10</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Anemone richardsonii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Viola epipsila</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
7. <u>Trientalis europaea</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Micranthes nelsoniana</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Geranium erianthum</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
10. <u>Carex utriculata</u>	<u>1</u>	<u>No</u>	<u>OBL</u>	
Total Cover: <u>75</u>				
50% of total cover: <u>37.5</u>				
20% of total cover: <u>15</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				<b>Hydrophytic</b>
% Cover of Wetland Bryophytes <u>15</u> % Cover of Bryophytes <u>25</u>				<b>Vegetation</b>
(Where applicable)				Yes <u>X</u> No <u>      </u>
				<b>Present?</b>

Remarks:

Trace: Poa arc, Car big, Sen tri, Ang gen, Car umb, Val cap, Epi pal, Aco del, Pet fri, Cha ang, Pyr asa, Ste sit, Rub cha, Vio lan, lichen.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-6							N/A		hor:Oe H2S at 4 inches.
6-12	10YR 3/2	85	2.5YR 4/4	15	C	PL	Yes	Loam	hor:A/B High OM-fibers.
12-20	5YR 4/6	88	2.5YR 4/4	10	C	PL	No	Sandy Loam	hor:B
12-20			5YR 4/6	2	C	M	No	Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☐ Histosol or Histel (A1)

☐ Histic Epipedon (A2)

☒ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☐ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

Alaska Gleyed Without Hue 5Y or Redder

Underlying Layer

Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  
Type: 

None

Depth (inches): 

N/A

Field Drainage Class: 

SPD - Somewhat Poorly Drained

**Hydric Soil Present?**    Yes    ☒    No    ☐

Remarks: H2S at 4 inches.

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  

☒ Surface Water (A1)

☒ High Water Table (A2)

☒ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☒ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**  

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☒ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☐ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☒ FAC-Neutral Test (D5)

**Field Observations:**  

Surface Water Present?    Yes    ☒    No    ☐

Water Table Present?    Yes    ☒    No    ☐

Saturation Present?    Yes    ☒    No    ☐

(includes capillary fringe)

Depth (inches): 

2.0

Depth (inches): 

0.0

Depth (inches): 

0.0

**Wetland Hydrology Present?**    Yes    ☒    No    ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Wetter than normal conditions due to high antecedent precipitation and rain the past three days. Small stream nearby. Numerous little drainage features with water running through; appear to be created from the recent rain.

Geomorphic Position:





Photo Name: Photo\_180814115144



Photo Name: Photo\_180814115210



Photo Name: Photo\_180814115114



## Additional Reference Data: Photos

HDR5002\_18



**Photo Name:** Photo\_180814115126



**Photo Name:** Photo\_180814115231



**Photo Name:** Photo\_180814115244

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/14/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR5004_18</u>	
Investigators: <u>AH, MD</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>8</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.886204</u>	Long: <u>-155.447037</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: <u>Wetter than normal antecedent precipitation.</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Empetrum nigrum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix barclayi</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACW species <u>26</u> x2= <u>52</u>
4. <u>Alnus sinuata</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>114</u> x3= <u>342</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>11</u> x4= <u>44</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>1</u> x5= <u>5</u>
Total Cover: <u>80</u>				Column Totals: <u>152</u> (A) <u>443</u> (B)
50% of total cover: <u>40</u>				<u>Prevalence Index = B/A=</u> <u>2.91</u>
20% of total cover: <u>16</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Sanguisorba canadensis</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Cornus suecica</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Achillea millefolium s.l.</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Chamaenerion angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Lupinus nootkatensis</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
8. <u>Pyrola asarifolia</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
9. <u>Aconitum delphinifolium</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Lycopodium annotinum s.l.</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>72</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>36</u>				
20% of total cover: <u>14.4</u>				
Plot size (radius, or length x width) <u>30 x 40 ft</u>				
% Cover of Wetland Bryophytes <u>5</u>				
% Cover of Bryophytes <u>45</u>				
(Where applicable)				
Remarks: <u>Trace: Vac vit, Spi ste, Bet nan, Sal ala, Fes alt, Vah atr, Luz mul, Car pod, Car big, Poa arc, Eri per, Gym dry, Ver vir, Ger eri, Ane nar, Bis viv, Rho int, Ang luc, Ver wor, Val cap, Ped cap, Ane ric, Rub ste, Pet fri, lichen.</u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oe
1-4	10YR 3/2	100					No	Loam	hor:A
4-18	10YR 3/3	100					No	Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes _____ No _____ <u>X</u>	
Type:	<u>None</u>		
Depth (inches):	<u>N/A</u>		
Field Drainage Class:	<u>MWD - Moderately Well Drained</u>		

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

<b>Field Observations:</b>						<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?	Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X	<input type="checkbox"/> No	Depth (inches):	0.0	
Saturation Present? (includes capillary fringe)	Yes	<input checked="" type="checkbox"/> X	<input type="checkbox"/> No	Depth (inches):	1.0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetter than average conditions due to high antecedent precipitation and rain the past three days. Incised, 3-foot wide stream within plot. Stream captured in photo points converges with mapped stream.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR5004\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
<u>Trientalis europaea</u>	<u>1</u>	<u>No</u>	<u>FACU</u>
<u>Viola langsdorffii</u>	<u>1</u>	<u>No</u>	<u>FACW</u>
<u>Artemisia arctica</u>	<u>1</u>	<u>No</u>	<u>NL</u>

Additional Reference Data: Photos

HDR5004\_18



Photo Name: Photo\_180814130758



Photo Name: Photo\_180814130648



**Photo Name:** Photo\_180814130724



**Photo Name:** Photo\_180814130744



**Photo Name:** Photo\_180814130643





**Photo Name:** Photo\_180814130705

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/14/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR5005_18</u>	
Investigators: <u>AH, MD</u>	Landform (hillslope, terrace, etc.): <u>Valleybottom</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>5</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u> Lat: <u>59.885818</u>	Long: <u>-155.445648</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1B</u>	

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>Wetter than average conditions due to high antecedent precipitation and rain the past three days.</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>4</u> <u>Multiply by:</u>
2. <u>Salix barclayi</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>4</u> x1= <u>4</u>
3. <u>Spiraea stevenii</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	FACW species <u>25</u> x2= <u>50</u>
4. <u>Salix fuscescens</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	FAC species <u>116</u> x3= <u>348</u>
5. <u>Empetrum nigrum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACU species <u>8</u> x4= <u>32</u>
6. <u>Alnus sp.</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	UPL species <u>3</u> x5= <u>15</u>
Total Cover: <u>42</u>				Column Totals: <u>156</u> (A) <u>449</u> (B)
50% of total cover: <u>21</u>				<u>Prevalence Index = B/A=</u> <u>2.88</u>
20% of total cover: <u>8.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex bigelowii</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Sanguisorba canadensis</u>	<u>15</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex podocarpa</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Rhodiola integrifolia</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Veratrum viride</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
7. <u>Viola epipsila</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
8. <u>Viola langsдорffii</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
9. <u>Comarum palustre</u>	<u>4</u>	<u>No</u>	<u>OBL</u>	
10. <u>Artemisia arctica</u>	<u>3</u>	<u>No</u>	<u>NL</u>	
Total Cover: <u>114</u>				
50% of total cover: <u>57</u>				
20% of total cover: <u>22.8</u>				
Plot size (radius, or length x width) <u>10 x 80 ft</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>45</u>				
% Cover of Bryophytes <u>60</u>				
(Where applicable)				

Remarks: Wetland bryophytes all sphagnum. Trace: Vac uli, Vac vit, Rho tom, Car plu, Car aqu, Poa arc, Phl alp, Vah atr, Luz mul, Luz par, Car micropoda, Car lac, Car bru, Jun cas, Rum arc, Cha ang, Aco del, Ach mil, Pol acu, Dry exp, Sen tri, Eri per, Ver wor, Bis viv, Pyr asa, Ane ric, Epi hor, lichen.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oe
2-8	2.5Y 4/2	90	2.5YR 4/4	5	C	PL	Yes	Loam	hor:A/B *2
2-8			5YR 5/6	5	C	PL	Yes	Loam	hor:A/B *3
8-16	10YR 3/2	85	2.5YR 3/6	15	C	PL	No	Sandy Loam	hor:B 50%coarse gravel and cobble.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>SPD - Somewhat Poorly Drained</u>	

Remarks: Approximately 90% cobble and coarse gravel at 16 inches. Also have Alaska Redox With 2.5Y HUE, but not problematic due to the presence of H2S.  
<sup>\*2:</sup> Some OM. H2S at 3 in. 50% coarse gravel and cobble. <sup>\*3:</sup> Some OM. H2S at 3 in. 50% coarse gravel and cobble.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

<b>Field Observations:</b>					<b>Wetland Hydrology Present?</b> Yes <u>  X  </u> No <u>      </u>		
Surface Water Present?	Yes	<u>  X  </u>	No	<u>      </u>		Depth (inches):	<u>      1.0      </u>
Water Table Present?	Yes	<u>  X  </u>	No	<u>      </u>		Depth (inches):	<u>      1.0      </u>
Saturation Present?	Yes	<u>  X  </u>	No	<u>      </u>		Depth (inches):	<u>      0.0      </u>
(includes capillary fringe)							

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Microhigh and lows, due to large rocks creating these micro features. Wetter than average conditions due to high antecedent precipitation and rain the past three days. Some groundwater discharge observed in a few locations in plot.  
  
Geomorphic Position: Valley bottom/ toe slope. Groundwater discharge observed in a few locations in plot.



Additional Reference Data: Overflow Vegetation

HDR5005\_18

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
Arctagrostis latifolia	2	No	FACW
Athyrium cyclosorum	1	No	FAC
Rubus stellatus	1	No	FAC
Angelica lucida	1	No	FACU
Geranium erianthum	1	No	FACU
Trientalis europaea	1	No	FACU
<b>Sapling/Shrub</b>			
Betula nana	1	No	FAC

Additional Reference Data: Photos

HDR5005\_18



Photo Name: Photo\_180814144322



Photo Name: Photo\_180814144208

## Additional Reference Data: Photos

HDR5005\_18



**Photo Name:** Photo\_180814144305



**Photo Name:** Photo\_180814144250



**Photo Name:** Photo\_180814144313



## Additional Reference Data: Photos

HDR5005\_18



Photo Name: Photo\_180814144343



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/14/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR5006_18</u>	
Investigators: <u>AH, MD</u>	Landform (hillslope, terrace, etc.): <u>Valleybottom</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>3</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.885342</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PEM1C</u>	

Vegetation Type: Subarctic Sedge – Moss Wet Meadow (SSMWM)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		

Remarks: Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		That Are OBL, FACW, or FAC: <u>100</u> (A/B)
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index worksheet:</b>
1. <u>Salix fuscescens</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	<u>Total % Cover of:</u> <u>60</u> <u>Multiply by:</u> <u>      </u>
2. <u>Vaccinium uliginosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	OBL species <u>60</u> x1= <u>60</u>
3. <u>Salix pulchra</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	FACW species <u>26</u> x2= <u>52</u>
4. <u>Salix barclayi</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FAC species <u>27</u> x3= <u>81</u>
5. <u>Empetrum nigrum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>34</u>				Column Totals: <u>113</u> (A) <u>193</u> (B)
50% of total cover: <u>17</u>		20% of total cover: <u>6.8</u>		<u>Prevalence Index = B/A=</u> <u>1.71</u>
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex pluriflora</u>	<u>35</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Dominance Test is >50%
2. <u>Comarum palustre</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Calamagrostis canadensis</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus stellatus</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Carex aquatilis</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	
7. <u>Equisetum arvense</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Viola epipsila</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Rumex arcticus</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>79</u>				
50% of total cover: <u>39.5</u>		20% of total cover: <u>15.8</u>		
Plot size (radius, or length x width) <u>20 x 60 ft</u>		% Bare Ground <u>0</u>		<b>Hydrophytic</b>
% Cover of Wetland Bryophytes <u>90</u>		% Cover of Bryophytes <u>95</u>		<b>Vegetation</b>
(Where applicable)				Yes <u>X</u> No <u>      </u>
				<b>Present?</b>

Remarks:

Wetland bryophytes: Sphagnum 85%, Calliergon 5%. Surface water 5%. Trace: Bet nan, Spi ste, Car lac, Vah atr, Luz par, Jun cas, Mon cha, Pol acu, Rho int, Ang luc, Art arc, Pri pum, Ane ric, Tr ieur, Epi hor, Bis viv, Epi pal, lichen.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-8							N/A		hor:Oe
8-11	2.5Y 3/2	100					Yes	Sandy Loam	hor:B High OM-fibers.
11-16							Yes		hor:Oe *4
16-20	2.5Y 3/2	100					Yes	Sandy Loam	hor:B High OM-fibers.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type:   None		
Depth (inches):		
Field Drainage Class:   PD - Poorly Drained		

Remarks: H2S at 7in.    \*4: Buried organics with some mineral content.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    2.0		
Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    0.0		
Saturation Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches):    0.0		
(includes capillary fringe)		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Wetter than average conditions due to high antecedent precipitation and rain the past three days.

Geomorphic Position: Valley bottom/ toe slope.



**Photo Name:** Photo\_180814160504



**Photo Name:** Photo\_180814160440



**Photo Name:** Photo\_180814160553





Photo Name: Photo\_180814160516



Photo Name: Photo\_180814160421



Photo Name: Photo\_180814160532

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/15/2018  
 Applicant/Owner: PLP Sampling Point: HDR5008\_18  
 Investigators: AH,MD Landform (hillslope, terrace, etc.): Hillside  
 Local Relief (concave, convex, none): None Slope(%): 6 HGM: N/A  
 Subregion (LRR): X Lat: 59.893002 Long: -155.294769 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks: <u>Wetter than normal antecedent precipitation</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Vaccinium uliginosum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium vitis-idaea</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>Salix pulchra</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FAC species <u>132</u> x3= <u>396</u>
5. <u>Rhododendron tomentosum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>115</u>				Column Totals: <u>132</u> (A) <u>396</u> (B)
50% of total cover: <u>57.5</u>				Prevalence Index = B/A= <u>3.00</u>
20% of total cover: <u>23</u>				
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Calamagrostis canadensis</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex microchaeta</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>17</u>				
50% of total cover: <u>8.5</u>				
20% of total cover: <u>3.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				% Bare Ground <u>0</u>
% Cover of Wetland Bryophytes <u>0</u>				% Cover of Bryophytes <u>15</u>
(Where applicable)				

Remarks: 2% Lichen. Trace: And pol, Sal fus, Bet nan, Cal str, Rho int, Art arc, Arc lat, Bis plu, San can, Rub cha.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A		hor:Oe
4-19	10YR 3/3	100					No	Loamy Coarse	hor:B/C 40% coarse gravel. 30% cobble.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type: None			Yes	No	X
Depth (inches):	N/A				
Field Drainage Class:	MWD - Moderately Well Drained				

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):	1.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):	2.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):	1.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetter than average conditions due to high antecedent precipitation and recent rain (Aug 10-12). Trace surface water in low spots approximately 1-2 inches deep.
Geomorphic Position:



## Additional Reference Data: Photos

HDR5008\_18



Photo Name: Photo\_180815091011



Photo Name: Photo\_180815090926



Photo Name: Photo\_180815091047



## Additional Reference Data: Photos

HDR5008\_18



Photo Name: Photo\_180815091028



Photo Name: Photo\_180815090942



Photo Name: Photo\_180815090857

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/15/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR5014_18</u>	
Investigators: <u>AH, MD</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>3</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.891960</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1/EM1B</u>	

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: Site appears to be in relict beaver-modified environment. Wetter than normal antecedent precipitation.		

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index worksheet:</b>
<b>Sapling/Shrub Stratum</b>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Salix pulchra</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>10</u> x1= <u>10</u>
2. <u>Spiraea stevenii</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	FACW species <u>10</u> x2= <u>20</u>
3. <u>Salix fuscescens</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	FAC species <u>142</u> x3= <u>426</u>
4. <u>Salix barclayi</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACU species <u>5</u> x4= <u>20</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>167</u> (A) <u>476</u> (B)
Total Cover: <u>37</u>				<b>Prevalence Index = B/A =</b> <u>2.85</u>
50% of total cover: <u>18.5</u>				
20% of total cover: <u>7.4</u>				
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Viola epipsila</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Comarum palustre</u>	<u>10</u>	<u>No</u>	<u>OBL</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Rubus stellatus</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>130</u>				
50% of total cover: <u>65</u>				
20% of total cover: <u>26</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>2</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>35</u>				<b>Present?</b>
(Where applicable)				

Remarks:

Trace: Bet nan, Rho tom, Vac uli, Emp nig, Betula x, Car can, Jun cas, Car big, Eri cha, Car bru, Ger eri, Pol acu, Ath fil, Epi pal, Ang luc, Cha ang, Gym dry, Tri eur, Ane ric, Car umb, Moe lat, lichen. Vegetation community could almost go to BH call.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-6							No		hor:Oe H2S at 4 in.
6-12	2.5Y 3/2	90	2.5YR 4/6	5	C	PL	Yes	Silty Clay Loam	hor:A/B
6-12			2.5YR 4/8	5	C	PL	Yes	Silty Clay Loam	hor:A/B
12-20	10YR 2/2	100					Yes	Silt Loam	hor:Ab

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☐ Histosol or Histel (A1)

☐ Histic Epipedon (A2)

☒ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☐ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder

☐ Underlying Layer

☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  
Type: None  
Depth (inches): N/A  
Field Drainage Class: SPD - Somewhat Poorly Drained

**Hydric Soil Present?**    Yes    ☒    No    ☐

Remarks:

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  

☐ Surface Water (A1)

☐ High Water Table (A2)

☒ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☒ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**  

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☒ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☒ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☒ FAC-Neutral Test (D5)

**Field Observations:**  
Surface Water Present?    Yes    ☐    No    ☒    Depth (inches):                       
Water Table Present?    Yes    ☒    No    ☐    Depth (inches):           14.0            
Saturation Present?    Yes    ☒    No    ☐    Depth (inches):           5.0            
(includes capillary fringe)

**Wetland Hydrology Present?**    Yes    ☒    No    ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Water table at 14. Small incised stream (mapped) within plot.  
  
Geomorphic Position: concave toeslope.



Photo Name: Photo\_180815123157



Photo Name: Photo\_180815123114



Photo Name: Photo\_180815123352



## Additional Reference Data: Photos

HDR5014\_18



Photo Name: Photo\_180815123232



Photo Name: Photo\_180815123221



Photo Name: Photo\_180815123144



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/15/2018</u>
Applicant/Owner: <u>PLP</u>		Sampling Point: <u>HDR5015_18</u>
Investigators: <u>AH, MD</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>2</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.891579</u>	Long: <u>-155.294708</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1/EM1B</u>	Datum: <u>WGS84</u>

Vegetation Type: Open Willow Low Shrub Fen (OWLSF)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>Wetter than normal antecedent precipitation</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>31</u> <u>Multiply by:</u>
2. <u>Salix fuscescens</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	OBL species <u>31</u> x1= <u>31</u>
3. <u>Spiraea stevenii</u>	<u>8</u>	<u>No</u>	<u>FACU</u>	FACW species <u>20</u> x2= <u>40</u>
4. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>116</u> x3= <u>348</u>
5. <u>Salix barclayi</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACU species <u>13</u> x4= <u>52</u>
6. <u>Betula sp.</u>	<u>2</u>	<u>No</u>	<u>N/A</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>62</u>				Column Totals: <u>180</u> (A) <u>471</u> (B)
50% of total cover: <u>31</u>				<u>Prevalence Index = B/A=</u> <u>2.62</u>
20% of total cover: <u>12.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Comarum palustre</u>	<u>15</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Eriophorum chamissonis s.l.</u>	<u>15</u>	<u>No</u>	<u>OBL</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Rubus stellatus</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Viola epipsila</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
7. <u>Chamaenerion angustifolium</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>120</u>				
50% of total cover: <u>60</u>				
20% of total cover: <u>24</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>25</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>65</u>				<b>Present?</b>
(Where applicable)				

Remarks: Trace: Bet ken saplings, Emp nig, Rho tom, And pol, Vac vit, Car bru, Car can, Poa arc, Epi pal, Ath fil, Ste sit. Betula species is actually Betula hybrid; Betula hybrid not in drop down. Could also go with OWTS call for veg community.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-19							N/A		hor:Oe H2S between 5-9 inches.
19-23							N/A		hor:Oa

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	VPD - Very Poorly Drained		
		<b>Hydric Soil Present?</b>	Yes <u>  X  </u> No <u>      </u>

Remarks: H2S at 5-9 inches.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:					
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	5.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	0.0	
(includes capillary fringe)			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position: Concave toeslope. Area appears to be relic beaver-modified environment (at least a couple decades old).

Additional Reference Data: Overflow Vegetation

HDR5015\_18

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Salix bebbiana	1	No	FAC
Vaccinium oxycoccos	1	No	OBL

Additional Reference Data: Photos

HDR5015\_18



Photo Name: Photo\_180815140822



Photo Name: Photo\_180815140702





Photo Name: Photo\_180815140726



Photo Name: Photo\_180815140742



Photo Name: Photo\_180815140645

## Additional Reference Data: Photos

HDR5015\_18



Photo Name: Photo\_180815140806

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/15/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR5017_18</u>	
Investigators: <u>AH, MD</u>	Landform (hillslope, terrace, etc.): <u>Mound</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): <u>5</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.891834</u>	Long: <u>-155.293930</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Closed Alder – Willow Tall Shrub (CAWTS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: Appears to be old dam site of beaver modified area. Site is elevated above surrounding OWLS/Calcan community on a mound type feature. Wetter than normal antecedent precipitation.	

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Alnus sinuata</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix barclayi</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>162</u> x3= <u>486</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>6</u> x4= <u>24</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>90</u>				Column Totals: <u>168</u> (A) <u>510</u> (B)
50% of total cover: <u>45</u>				<u>Prevalence Index = B/A=</u> <u>3.04</u>
20% of total cover: <u>18</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Prevalence Index is ≤3.0
3. <u>Dryopteris expansa</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Athyrium cyclosorum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Trientalis europaea</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>78</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>39</u>				
20% of total cover: <u>15.6</u>				
Plot size (radius, or length x width) <u>10 x 30 ft</u> % Bare Ground <u>      </u>				
% Cover of Wetland Bryophytes <u>      </u>		% Cover of Bryophytes <u>25</u>		
(Where applicable)				

Remarks:

Trace: Rib gla, San can, Chr tet, Epi cil, Moe lit, Vio lan, Ste sit, Vio epi.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-8							N/A		hor:Oe
8-20	2.5Y 3/2	75	5YR 5/8	5	C	PL	No	Silty Clay Loam	hor:B
8-20			7.5YR 5/8	20	C	PL	No	Silty Clay Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Type:	<u>None</u>		
Depth (inches):	<u>N/A</u>		
Field Drainage Class:	<u>SPD - Somewhat Poorly Drained</u>		

Remarks: Water table in soil pit at 18 inches. 2.5Y Hue soil indicator criteria not met, based on the lack of primary hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	3.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	18.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	18.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site is located on a small elevated/mound type feature within larger swale and above the surrounding OWLS/Calcan wetland community. Surface water approximately 3-6 inches deep in highly incised low spots on the periphery of the plot. Based on the fact that surface water is located on the periphery, and is not prevalent throughout the plot, the presence of surface water is not considered an indicator of wetland hydrology at this site.

Geomorphic Position:

## Additional Reference Data: Photos

HDR5017\_18



Photo Name: Photo\_180815153640



Photo Name: Photo\_180815153559



Photo Name: Photo\_180815153628



## Additional Reference Data: Photos

HDR5017\_18



Photo Name: Photo\_180815153546



Photo Name: Photo\_180815153613



Photo Name: Photo\_180815153536



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/16/2018  
 Applicant/Owner: PLP Sampling Point: HDR5018\_18  
 Investigators: AH, MD Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): Concave Slope(%): 3 HGM: Slope  
 Subregion (LRR): X Lat: 59.891403 Long: -155.292709 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1/EM1B

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	<u>75</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>8</u> <u>Multiply by:</u> <u>8</u>
2. <u>Salix barclayi</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	OBL species <u>8</u> x1= <u>8</u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>190</u> x3= <u>570</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>80</u>				Column Totals: <u>198</u> (A) <u>578</u> (B)
50% of total cover: <u>40</u>				<u>Prevalence Index = B/A=</u> <u>2.92</u>
20% of total cover: <u>16</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Comarum palustre</u>	<u>8</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>118</u>				
50% of total cover: <u>59</u>				
20% of total cover: <u>23.6</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>      </u>				Yes <u>X</u> No <u>      </u>
(Where applicable)				<b>Present?</b>

Remarks:

Trace: Gym dry, San can, Rho int, Epi pal, Gal trifidum, Rub ste, Pyr asa, Tri eur, Vio epi. Could also go with OWLSF.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-19							N/A		hor:Oe
19-25	5Y 2.5/2	95	2.5YR 3/6	5	C	PL	Yes	Very Fine Sandy	hor:A/B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	VPD - Very Poorly Drained		
		<b>Hydric Soil Present?</b>	Yes <u>  X  </u> No <u>      </u>

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>					
Surface Water Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):	3.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):	10.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):	0.0	
(includes capillary fringe)			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position: Concave toeslope. Adjacent to incised mapped stream.

## Additional Reference Data: Photos

HDR5018\_18



Photo Name: Photo\_180815161443



Photo Name: Photo\_180815161413



Photo Name: Photo\_180815161518





**Photo Name:** Photo\_180815161540



**Photo Name:** Photo\_180815161549



**Photo Name:** Photo\_180815161505

**Photo Name:** Photo\_180815161430



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/16/2018  
 Applicant/Owner: PLP Sampling Point: HDR5021\_18  
 Investigators: AH, MD Landform (hillslope, terrace, etc.): Floodplain  
 Local Relief (concave, convex, none): None Slope(%): 2 HGM: N/A  
 Subregion (LRR): X Lat: 59.880653 Long: -155.166412 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Willow Tall Shrub (OWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks: <u>Wetter than normal antecedent precipitation</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
Sapling/Shrub Stratum				Prevalence Index worksheet:
1. <u>Salix pulchra</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by: <u>      </u>
2. <u>Salix barclayi</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>1</u> x1= <u>1</u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>10</u> x2= <u>20</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>138</u> x3= <u>414</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>6</u> x4= <u>24</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>60</u>				Column Totals: <u>155</u> (A) <u>459</u> (B)
50% of total cover: <u>30</u>				Prevalence Index = B/A= <u>2.96</u>
20% of total cover: <u>12</u>				
Herb Stratum				Hydrophytic Vegetation Indicators:
1. <u>Calamagrostis canadensis</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Sanguisorba canadensis</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus stellatus</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Viola epipsila</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Achillea millefolium s.l.</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
7. <u>Polemonium acutiflorum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Valeriana capitata</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Aconitum delphinifolium</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Angelica lucida</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>95</u>				
50% of total cover: <u>47.5</u>				
20% of total cover: <u>19</u>				
Plot size (radius, or length x width) <u>25 x 50 ft</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>      </u>				
% Cover of Bryophytes <u>25</u>				
(Where applicable)				
Remarks: <u>Trace: Bet nan, Spi ste, Vac uli, Poa arc, Arc lat, Car bru, Car med, Rho int, Sol mul, Ane ric, Moe lat, Tri eur, Ped sud, Pyr asa, arbo lichen. On edge of polygon at 3PP original location.</u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A	Fine Sandy Loam	hor:Oi
2-6	7.5YR 3/2	100					No	Silt Loam	hor:A
6-8	10YR 4/3	100					No	Fine Sand	hor:B
8-9							N/A		hor:Oa Buried
9-15	10YR 3/2	100					No	Silt Loam	hor:B
15-17	10YR 4/3	80	7.5YR 4/4	20	C	PL	No	Silty Clay Loam	hor:C1
17-24	2.5Y 4/2	80	7.5YR 4/6	20	C	PL	No	Silty Clay Loam	hor:C2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b> Type: None Depth (inches): Field Drainage Class: MWD - Moderately Well Drained	<b>Hydric Soil Present?</b> Yes    No    X
--	--

Remarks: No hydric soil indicators observed within upper portion of soil. No primary hydrology indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present?    Yes    No    X    Depth (inches): Water Table Present?    Yes    No    X    Depth (inches): Saturation Present?    Yes    No    X    Depth (inches): (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes    No    X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Occasional small depressions throughout plot. Wetter than average conditions due to high antecedent precipitation. No primary hydrology observed.  
  
Geomorphic Position: Floodplain.

Additional Reference Data: Overflow Vegetation

HDR5021\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Chamaenerion angustifolium	1	No	FACU
Galium boreale	1	No	FACU
Comarum palustre	1	No	OBL

Additional Reference Data: Photos

HDR5021\_18



Photo Name: Photo\_180816091043



Photo Name: Photo\_180816090806

## Additional Reference Data: Photos

HDR5021\_18



**Photo Name:** Photo\_180816090930



**Photo Name:** Photo\_180816090814



**Photo Name:** Photo\_180816090908



## Additional Reference Data: Photos

HDR5021\_18



**Photo Name:** Photo\_180816090951



**Photo Name:** Photo\_180816091016

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/16/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR5022_18</u>	
Investigators: <u>AH, MD</u>	Landform (hillslope, terrace, etc.): <u>Floodplain</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>2</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.879982</u>	Long: <u>-155.166382</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: <u>Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix barclayi</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>1</u> <u>Multiply by:</u>
2. <u>Salix pulchra</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>1</u> x1= <u>1</u>
3. <u>Dasiphora fruticosa</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FACW species <u>11</u> x2= <u>22</u>
4. <u>Spiraea stevenii</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	FAC species <u>110</u> x3= <u>330</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>6</u> x4= <u>24</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>59</u>				Column Totals: <u>128</u> (A) <u>377</u> (B)
50% of total cover: <u>29.5</u>				<u>Prevalence Index = B/A=</u> <u>2.95</u>
20% of total cover: <u>11.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Rubus stellatus</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Valeriana capitata</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Viola epipsila</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Galium boreale</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
7. <u>Achillea millefolium s.l.</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Anemone richardsonii</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Equisetum arvense</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Equisetum pratense</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
Total Cover: <u>69</u>				
50% of total cover: <u>34.5</u>				
20% of total cover: <u>13.8</u>				
Plot size (radius, or length x width) <u>30 ft</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>      </u> % Cover of Bryophytes <u>20</u>				
(Where applicable)				
Remarks: <u>Trace: Vac uli, Arc lat, Poa pra alpigena, Car bru, Car med, Cha ang, Rho int, Ang luc, Pol acu, Aco del, Car umb, Par pal, Moe lat, Tri eur</u>				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A		hor:Oe
4-5							N/A		hor:Oa
5-8	10YR 3/2	100					No	Silt Loam	hor:A
8-11	10YR 4/3	100					No	Sandy Loam	hor:B 50% medium gravel
11-19	10YR 4/3	100					No	Loamy Coarse	hor:C 50% medium gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	No	X
Depth (inches):	N/A				
Field Drainage Class:	MWD - Moderately Well Drained				

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	No	X		
Water Table Present?	Yes	X	No		
Saturation Present?	Yes	X	No		
(includes capillary fringe)					
Depth (inches):			Depth (inches):	8.0	
Depth (inches):			Depth (inches):	7.0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site located in floodplain. Wetter than average conditions due to high antecedent precipitation. Surface water observed in swale/old channel feature. Surface water in swale 1-2 feet deep, will be pulled out separately from plot. Old drainage channels appear that they may at times connect to nearby small drainage and pond (visible on imagery and mapped as wetland) to the west-southwest. Pull out old channel/swale feature and connect to drainage to the SW.

Geomorphic Position: Flood plain.



Additional Reference Data: Overflow Vegetation

HDR5022\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Comarum palustre	1	No	OBL

Additional Reference Data: Photos

HDR5022\_18



Photo Name: Photo\_180816111639



Photo Name: Photo\_180816111729



**Photo Name:** Photo\_180816111706



**Photo Name:** Photo\_180816111650



**Photo Name:** Photo\_180816111719





**Photo Name:** Photo\_180816111741



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/16/2018  
 Applicant/Owner: PLP Sampling Point: HDR5023\_18  
 Investigators: AH, MD Landform (hillslope, terrace, etc.): Floodplain  
 Local Relief (concave, convex, none): None Slope(%): 2 HGM: Riverine  
 Subregion (LRR): X Lat: 59.880051 Long: -155.166519 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1/EM1C

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Picea glauca</u>	5	Yes	FACU	Number of Dominant Species
2. <u>      </u>				That Are OBL, FACW, or FAC: <u>6</u> (A)
3. <u>      </u>				Total Number of Dominant
4. <u>      </u>				Species Across All Strata: <u>7</u> (B)
Total Cover: <u>5</u>				Percent of Dominant Species
50% of total cover: <u>2.5</u>		20% of total cover: <u>1</u>		That Are OBL, FACW, or FAC: <u>86</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix barclayi</u>	15	Yes	FAC	<u>Total % Cover of:</u> <u>10</u> <u>Multiply by:</u> <u>10</u>
2. <u>Salix pulchra</u>	15	Yes	FAC	OBL species <u>10</u> x1= <u>10</u>
3. <u>Dasiphora fruticosa</u>	8	Yes	FAC	FACW species <u>30</u> x2= <u>60</u>
4. <u>      </u>				FAC species <u>99</u> x3= <u>297</u>
5. <u>      </u>				FACU species <u>16</u> x4= <u>64</u>
6. <u>      </u>				UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>38</u>				Column Totals: <u>155</u> (A) <u>431</u> (B)
50% of total cover: <u>19</u>		20% of total cover: <u>7.6</u>		<u>Prevalence Index = B/A=</u> <u>2.78</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	45	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Arctagrostis latifolia</u>	15	Yes	FACW	<u>X</u> Prevalence Index is ≤3.0
3. <u>Sanguisorba canadensis</u>	15	Yes	FACW	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Comarum palustre</u>	10	No	OBL	data in Remarks or on a separate sheet)
5. <u>Valeriana capitata</u>	8	No	FAC	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Galium boreale</u>	8	No	FACU	
7. <u>Rubus stellatus</u>	5	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Viola epipsila</u>	3	No	FAC	must be present, unless disturbed or problematic.
9. <u>Achillea millefolium s.l.</u>	3	No	FACU	
10. <u>      </u>				
Total Cover: <u>112</u>				
50% of total cover: <u>56</u>		20% of total cover: <u>22.4</u>		
Plot size (radius, or length x width) <u>15 x 40 ft</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>      </u>		% Cover of Bryophytes <u>25</u>		
(Where applicable)				

Remarks: Trace Sphagnum. Trace: Bet nan, Car med, Car big, Luz mul, Poa pra alpigena, Car bru, Carex rostrata, Equ pra, Rho int, Aco del, Rum arc, Cha ang, Epi pal, Pol acu, Tri eur. Could also go with a BH veg call.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							No		hor:Oi
3-6	7.5YR 3/2	100					No	Silt Loam	hor:A
6-10	7.5YR 3/2	80	5YR 4/6	20	C	PL	Yes	Silt Loam	hor:B
10-18	5Y 4/2	80	5YR 4/6	20	C	PL	Yes	Silty Clay Loam	hor:C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input checked="" type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>PD - Poorly Drained</u>	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>				<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?	Yes	<input checked="" type="checkbox"/>	No	
Water Table Present?	Yes	<input checked="" type="checkbox"/>	No	
Saturation Present?	Yes	<input checked="" type="checkbox"/>	No	
(includes capillary fringe)				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Trace surface water 3-8 inches.  
  
Geomorphic Position: Swale within floodplain.

## Additional Reference Data: Photos

HDR5023\_18



Photo Name: Photo\_180816130301



Photo Name: Photo\_180816130316



Photo Name: Photo\_180816130348



## Additional Reference Data: Photos

HDR5023\_18



Photo Name: Photo\_180816130252



Photo Name: Photo\_180816130359



Photo Name: Photo\_180816130337

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: _____	Sampling Date: <u>8/16/2018</u>
Applicant/Owner: <u>PLP</u>		Sampling Point: <u>HDR5026_18</u>
Investigators: <u>AH, MD</u>	Landform (hillslope, terrace, etc.): <u>Floodplain</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>0</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.881168</u>	Long: <u>-155.167236</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>U</u>	Datum: <u>WGS84</u>

Vegetation Type: Broadleaf Woodland (BW)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If No, explain in Remarks)

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ X \_\_\_\_\_ No \_\_\_\_\_

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b>	Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>		
Wetland Hydrology Present? Yes _____ No <u>X</u>		

Remarks: High amount of bear sign (odor, scat, a couple trails that appeared well used in closed shrub/scrub nearby). Salmon observed in Talarik Creek, adjacent to plot. As such, we did not walk through the southern portion of the polygon due to bear/safety concerns. Wetter than normal antecedent precipitation.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Salix alaxensis (tree)</u>	10	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>71</u> (A/B)
2. <u>Populus balsamifera (tree)</u>	5	Yes	FACU	
3. _____				
4. _____				
Total Cover: <u>15</u>				<b>Prevalence Index worksheet:</b> <u>Total % Cover of:</u> <u>                    </u> <u>Multiply by:</u> OBL species <u>                    </u> x1= <u>                    </u> FACW species <u>15</u> x2= <u>30</u> FAC species <u>138</u> x3= <u>414</u> FACU species <u>63</u> x4= <u>252</u> UPL species <u>                    </u> x5= <u>                    </u> Column Totals: <u>216</u> (A) <u>696</u> (B)  <i>Prevalence Index = B/A=</i> <u>3.22</u>
50% of total cover: <u>7.5</u>		20% of total cover: <u>3</u>		
<u>Sapling/Shrub Stratum</u>				
1. <u>Salix pulchra (shrub)</u>	20	Yes	FAC	<b>Hydrophytic Vegetation Indicators:</b> <u>X</u> Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Alnus sinuata (shrub)</u>	15	Yes	FAC	
3. <u>Salix alaxensis (shrub)</u>	10	No	FAC	
4. <u>Salix barclayi (shrub)</u>	10	No	FAC	
5. <u>Populus balsamifera (shrub)</u>	10	No	FACU	
6. _____				
Total Cover: <u>65</u>				
50% of total cover: <u>32.5</u>		20% of total cover: <u>13</u>		
<u>Herb Stratum</u>				
1. <u>Equisetum arvense</u>	35	Yes	FAC	
2. <u>Rubus stellatus</u>	30	Yes	FAC	
3. <u>Galium boreale</u>	30	Yes	FACU	
4. <u>Sanguisorba canadensis</u>	15	No	FACW	
5. <u>Thalictrum sparsiflorum</u>	10	No	FACU	
6. <u>Calamagrostis canadensis</u>	5	No	FAC	
7. <u>Chamaenerion angustifolium</u>	5	No	FACU	
8. <u>Viola epipsila</u>	2	No	FAC	
9. <u>Lupinus nootkatensis</u>	2	No	FACU	
10. <u>Polemonium acutiflorum</u>	1	No	FAC	
Total Cover: <u>136</u>				<b>Hydrophytic Vegetation Present?</b>
50% of total cover: <u>68</u>		20% of total cover: <u>27.2</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground _____		
% Cover of Wetland Bryophytes _____		% Cover of Bryophytes <sup>80</sup> _____		
(Where applicable)				

Remarks:

Trace: Emp nig, Sal arb, Poa pra alpigena, Luz par, Luz mul, Str amp, Ang luc, Ger eri, Ach mil, Aco del, Com pal, Par pal, Equ var, Moe lat, Tri eur, Ane ric, lichen.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-4	10YR 3/3	100					N/A	Sandy Loam	hor:A
4-19	10YR 3/3	100					N/A	Coarse Sand	hor:C 25% coarse gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	WD - Well Drained				
		<b>Hydric Soil Present?</b>	Yes	No	X

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>					
Surface Water Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	X <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	X <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	X <input checked="" type="checkbox"/>	Depth (inches):	
(includes capillary fringe)					
			<b>Wetland Hydrology Present?</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary hydrology indicators observed. Wetter than normal antecedent precipitation.

Geomorphic Position: Floodplain.



Additional Reference Data: Overflow Vegetation

HDR5026\_18

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Pyrola asarifolia	1	No	FACU

Additional Reference Data: Photos

HDR5026\_18



Photo Name: Photo\_180816140222



Photo Name: Photo\_180816140147

## Additional Reference Data: Photos

HDR5026\_18



Photo Name: Photo\_180816140228



Photo Name: Photo\_180816140213



Photo Name: Photo\_180816140134





Photo Name: Photo\_180816140202



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/16/2018  
 Applicant/Owner: PLP Sampling Point: HDR5027\_18  
 Investigators: AH, MD Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): None Slope(%): 7 HGM: N/A  
 Subregion (LRR): X Lat: 59.873905 Long: -155.164963 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Dwarf Birch Shrub (ODBS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Wetter than normal antecedent precipitation

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>      </u>			
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index worksheet:</b> Total % Cover of: <u>      </u> Multiply by: <u>      </u> OBL species <u>      </u> x1= <u>      </u> FACW species <u>      </u> x2= <u>      </u> FAC species <u>88</u> x3= <u>264</u> FACU species <u>5</u> x4= <u>20</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>93</u> (A) <u>284</u> (B)  Prevalence Index = B/A= <u>3.05</u>
1. <u>Betula nana</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Empetrum nigrum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Vaccinium uliginosum</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	
4. <u>Rhododendron tomentosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
5. <u>Picea glauca</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
6. <u>Salix glauca</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
Total Cover:	<u>83</u>			
50% of total cover:	<u>41.5</u>	20% of total cover:	<u>16.6</u>	
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Carex microchaeta</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Festuca altaica</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>10</u>			
50% of total cover:	<u>5</u>	20% of total cover:	<u>2</u>	
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>      </u> % Cover of Wetland Bryophytes <u>      </u> % Cover of Bryophytes <u>10</u> (Where applicable)				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>

Remarks: Lichen cover 60%. Trace: Vac vit, Arc alp, Sal fus, Cal can, Cha ang, Rho int, Ped lab, Art arc, Lyc ann. Bolete, Russula, Lactarius. Shrub total of Picea glauca also includes 2% trees.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A		hor:Oe
4-5							N/A		hor:Oa
5-20	7.5YR 3/2	100					No	Sandy Loam	hor:B/C *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type: None			Yes	No	X
Depth (inches): N/A					
Field Drainage Class: SED - Somewhat Excessively Drained					

Remarks: No hydric soil indicators observed. \*3: 30% coarse gravel and 20% cobble.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	No	X	Depth (inches):	
Water Table Present?	Yes	No	X	Depth (inches):	
Saturation Present?	Yes	No	X	Depth (inches):	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary hydrology indicators observed. Wetter than normal antecedent precipitation.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR5027\_18

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Salix pulchra	1	No	FAC

Additional Reference Data: Photos

HDR5027\_18



Photo Name: Photo\_180816145823



Photo Name: Photo\_180816145748





Photo Name: Photo\_180816145713



Photo Name: Photo\_180816145832



Photo Name: Photo\_180816145806





**Photo Name:** Photo\_180816145844



**Photo Name:** Photo\_180816145732

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/16/2018</u>
Applicant/Owner: <u>PLP</u>		Sampling Point: <u>HDR5028_18</u>
Investigators: <u>AH, MD</u>	Landform (hillslope, terrace, etc.): <u>Valleybottom</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u></u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.871658</u>	Long: <u>-155.162048</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>U</u>	Datum: <u>WGS84</u>

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No X (If No, explain in Remarks)

Are Vegetation:  Soil  or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation:  Soil  or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u></u>		
Hydric Soil Present? Yes <u></u> No <u>X</u>		
Wetland Hydrology Present? Yes <u>X</u> No <u></u>	Is the Sampled Area within a Wetland? Yes <u></u> No <u>X</u>	

Remarks: Wetter than normal antecedent precipitation. Plot adjacent to mapped stream.

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
<u>Tree Stratum</u>				Number of Dominant Species
1. <u></u>	<u></u>	<u></u>	<u></u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
2. <u></u>	<u></u>	<u></u>	<u></u>	Total Number of Dominant
3. <u></u>	<u></u>	<u></u>	<u></u>	Species Across All Strata: <u>2</u> (B)
4. <u></u>	<u></u>	<u></u>	<u></u>	Percent of Dominant Species
Total Cover: <u></u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		<u>Dominance Test Worksheet:</u>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u></u> <u>Multiply by:</u> <u></u>
1. <u>Salix pulchra</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>8</u> x1= <u>8</u>
2. <u>Spiraea stevenii</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	FACW species <u>5</u> x2= <u>10</u>
3. <u></u>	<u></u>	<u></u>	<u></u>	FAC species <u>126</u> x3= <u>378</u>
4. <u></u>	<u></u>	<u></u>	<u></u>	FACU species <u>5</u> x4= <u>20</u>
5. <u></u>	<u></u>	<u></u>	<u></u>	UPL species <u></u> x5= <u></u>
6. <u></u>	<u></u>	<u></u>	<u></u>	Column Totals: <u>144</u> (A) <u>416</u> (B)
Total Cover: <u>30</u>				<u>Prevalence Index = B/A=</u> <u>2.89</u>
50% of total cover: <u>15</u>		20% of total cover: <u>6</u>		<u>Hydrophytic Vegetation Indicators:</u>
<u>Herb Stratum</u>				<u>X</u> Dominance Test is >50%
1. <u>Calamagrostis canadensis</u>	<u>95</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
2. <u>Comarum palustre</u>	<u>8</u>	<u>No</u>	<u>OBL</u>	<u></u> Morphological Adaptations <sup>1</sup> (Provide
3. <u>Sanguisorba canadensis</u>	<u>4</u>	<u>No</u>	<u>FACW</u>	<u></u> data in Remarks or on a separate sheet)
4. <u>Equisetum arvense</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<u></u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>Rubus stellatus</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
6. <u>Viola epipsila</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
7. <u>Stellaria sitchana</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u></u>	<u></u>	<u></u>	<u></u>	must be present, unless disturbed or problematic.
9. <u></u>	<u></u>	<u></u>	<u></u>	
10. <u></u>	<u></u>	<u></u>	<u></u>	
Total Cover: <u>114</u>				
50% of total cover: <u>57</u>		20% of total cover: <u>22.8</u>		
Plot size (radius, or length x width) <u>15 x 40 ft</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>35</u>		
(Where applicable)				

Remarks: Trace: Epi cil, Ath fil, Dry exp, Galium trifidum, Ang luc, Tri eur, lichen.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-4	7.5R 2.5/2	100					No	Silt Loam	hor:A High organic staining.
4-20	10YR 3/2	70	2.5YR 3/6	30	C	M	No	Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>						
Type:	None					
Depth (inches):	N/A					
Field Drainage Class:						
			<b>Hydric Soil Present?</b>	Yes	No	X

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>					
Surface Water Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):		
Water Table Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):	12.0	
Saturation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):	11.0	
(includes capillary fringe)			<b>Wetland Hydrology Present?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Trace of surface water. Wetter than average conditions due to high antecedent precipitation. Plot adjacent to mapped stream.

Geomorphic Position:



**Photo Name:** Photo\_180816161557



**Photo Name:** Photo\_180816161747



**Photo Name:** Photo\_180816161723



## Additional Reference Data: Photos

HDR5028\_18



**Photo Name:** Photo\_180816161637



**Photo Name:** Photo\_180816161715



**Photo Name:** Photo\_180816161734



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/17/2018  
 Applicant/Owner: PLP Sampling Point: HDR5030\_18  
 Investigators: AH, MD Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): Concave Slope(%): 27 HGM: N/A  
 Subregion (LRR): X Lat: 59.871471 Long: -155.163437 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks: <u>Wetter than normal antecedent precipitation</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>      </u>			
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index worksheet:</b> Total % Cover of: <u>      </u> Multiply by: OBL species <u>      </u> x1= <u>      </u> FACW species <u>5</u> x2= <u>10</u> FAC species <u>121</u> x3= <u>363</u> FACU species <u>30</u> x4= <u>120</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>156</u> (A) <u>493</u> (B)  Prevalence Index = B/A= <u>3.16</u>
1. <u>Salix pulchra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Spiraea stevenii</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Vaccinium uliginosum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
5. <u>Rhododendron tomentosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
6. <u>Salix barclayi</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
Total Cover:	<u>75</u>			
50% of total cover:	<u>37.5</u>	20% of total cover:	<u>15</u>	
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
1. <u>Calamagrostis canadensis</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Chamaenerion angustifolium</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
3. <u>Rubus stellatus</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	
4. <u>Rubus chamaemorus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
5. <u>Cornus suecica</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
6. <u>Carex brunnescens</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>81</u>			
50% of total cover:	<u>40.5</u>	20% of total cover:	<u>16.2</u>	
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u> % Cover of Wetland Bryophytes <u>T</u> % Cover of Bryophytes <u>30</u> (Where applicable)				
Remarks: <u>Trace: Vac vit, Sal gla, Lin bor, Poa arc, Car big, Dry exp, Lyc ann.</u>				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oe
3-5	10YR 4/3	100					No	Sandy Loam	hor:E
5-6							N/A		hor:Oa
6-8	10YR 2/2	100					No	Sandy Loam	hor:A
8-22	7.5YR 2.5/2	100					No	Sandy Loam	hor:B/C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: SPD - Somewhat Poorly Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: No hydric soil indicators observed. Soil pit has very little moisture.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No wetland hydrology indicators observed.

Geomorphic Position:

## Additional Reference Data: Photos

HDR5030\_18



**Photo Name:** Photo\_180817082501



**Photo Name:** Photo\_180817082522



**Photo Name:** Photo\_180817082515



## Additional Reference Data: Photos

HDR5030\_18



Photo Name: Photo\_180817082629



Photo Name: Photo\_180817082415



Photo Name: Photo\_180817082357

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/17/2018  
 Applicant/Owner: PLP Sampling Point: HDR5033\_18  
 Investigators: AH, MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 20 HGM: N/A  
 Subregion (LRR): X Lat: 59.871063 Long: -155.163223 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Equisetum (DEST-EQ)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Wetter than normal antecedent precipitation. Transitional area with wetlands immediately above and well-drained uplands below. Steep slope where water moves through quickly and does not remain long enough to create wetland conditions.

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>      </u>			
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index worksheet:</b> Total % Cover of: <u>      </u> Multiply by: OBL species <u>      </u> x1= <u>      </u> FACW species <u>3</u> x2= <u>6</u> FAC species <u>133</u> x3= <u>399</u> FACU species <u>      </u> x4= <u>      </u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>136</u> (A) <u>405</u> (B)  Prevalence Index = B/A= <u>2.98</u>
1. <u>Vaccinium uliginosum</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Empetrum nigrum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Betula nana</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Rhododendron tomentosum</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	
5. <u>Vaccinium vitis-idaea</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>108</u>			
50% of total cover:	<u>54</u>	20% of total cover:	<u>21.6</u>	
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% X Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
1. <u>Equisetum sylvaticum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Calamagrostis canadensis</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
3. <u>Carex bigelowii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
4. <u>Petasites frigidus s.l.</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>28</u>			
50% of total cover:	<u>14</u>	20% of total cover:	<u>5.6</u>	
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>35</u> % Cover of Bryophytes <u>55</u>				
(Where applicable)				

Remarks:

Lichen 2%. Trace: Pic gla sapling, Sal pul, Vac oxy, And pol, Sal fus, Spi ste, Sal ret, Cha ang, San can, Rub cha, Lyc ann, Rub ste, Cor sue.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A		hor:Oi Very moist.
5-8							N/A		hor:Oe Very moist.
8-13	10YR 4/3	75	5Y 5/1	20	D	PL	Yes	Silty Clay Loam	hor:B1 *3
8-13			5YR 5/8	5	C	PL	Yes	Silty Clay Loam	hor:B1 *4
13-20	10YR 4/3	85	5Y 5/1	5	D	PL	No	Sandy Clay Loam	hor:B2 No moisture

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  
☐ Histosol or Histel (A1)  
☐ Histic Epipedon (A2)  
☐ Hydrogen Sulfide (A4)  
☐ Thick Dark Surface (A12)  
☐ Alaska Gleyed (A13)  
☐ Alaska Redox (A14)  
☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  
☐ Alaska Color Change (TA4)<sup>4</sup>  
☐ Alaska Alpine Swales (TA5)  
☐ Alaska Redox With 2.5Y Hue  
  
<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.  
<sup>4</sup>Give details of color change in Remarks.

☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer  
☐ Other (Explain in Remarks)

**Restrictive Layer (if present):**  
Type:   
Depth (inches):   
Field Drainage Class:

**Hydric Soil Present?**    Yes ☐    No ☒ ☐

Remarks: Very moist in organic layer. Moist in B1. Alpha-alpha positive result for 60% B1 layer. Do not meet the requirements of problem soils, due to lack of primary hydrology.    \*3: Very moist, not quite saturated \*4: Very moist, not quite saturated

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  
☐ Surface Water (A1)    ☐ Inundation Visible on Aerial Imagery (B7)  
☐ High Water Table (A2)    ☐ Sparsely Vegetated Concave Surface (B8)  
☐ Saturation (A3)    ☐ Marl Deposits (B15)  
☐ Water Marks (B1)    ☐ Hydrogen Sulfide Odor (C1)  
☐ Sediment Deposits (B2)    ☐ Dry Season Water Table (C2)  
☐ Drift Deposits (B3)    ☐ Other (Explain in Remarks)  
☐ Algal Mat or Crust (B4)  
☐ Iron Deposits (B5)  
☐ Surface Soil Cracks (B6)

**Secondary Indicators (2 or more required)**  
☐ Water-stained Leaves (B9)  
☐ Drainage Patterns (B10)  
☐ Oxidized Rhizospheres along Living Roots (C3)  
☒ Presence of Reduced Iron (C4)  
☐ Salt Deposits (C5)  
☐ Stunted or Stressed Plants (D1)  
☐ Geomorphic Position (D2)  
☐ Shallow Aquitard (D3)  
☐ Microtopographic Relief (D4)  
☒ FAC-Neutral Test (D5)

**Field Observations:**  
Surface Water Present?    Yes ☐    No ☒    X ☐    Depth (inches):   
Water Table Present?    Yes ☐    No ☒    X ☐    Depth (inches):   
Saturation Present?    Yes ☐    No ☒    X ☐    Depth (inches):   
(includes capillary fringe)

**Wetland Hydrology Present?**    Yes ☒    No ☐ ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Very moist in organic layers. Wetter than average conditions due to high antecedent precipitation.

Geomorphic Position:



## Additional Reference Data: Photos

HDR5033\_18



Photo Name: Photo\_180817112939



Photo Name: Photo\_180817112958



Photo Name: Photo\_180817112931





Photo Name: Photo\_180817112948



Photo Name: Photo\_180817112905



Photo Name: Photo\_180817112849

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/17/2018  
 Applicant/Owner: PLP Sampling Point: HDR5034\_18  
 Investigators: AH, MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 20 HGM: N/A  
 Subregion (LRR): X Lat: 59.870647 Long: -155.163559 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Bluejoint Herb (BH)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b> Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Wetter than normal antecedent precipitation. Transitional area with wetlands immediately above and well-drained uplands below. Steep slope where water moves through quickly and does not remain long enough to create wetland conditions.

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
<b>Tree Stratum</b>				
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix pulchra</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<b>Prevalence Index worksheet:</b> <u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u> OBL species <u>      </u> x1= <u>      </u> FACW species <u>      </u> x2= <u>      </u> FAC species <u>121</u> x3= <u>363</u> FACU species <u>22</u> x4= <u>88</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>143</u> (A) <u>451</u> (B)  <i>Prevalence Index = B/A=</i> <u>3.15</u>
2. <u>Betula sp.</u>	<u>3</u>	<u>Yes</u>	<u>N/A</u>	
3. <u>Spiraea stevenii</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>9</u>				
50% of total cover: <u>4.5</u>		20% of total cover: <u>1.8</u>		
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>90</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
2. <u>Equisetum sylvaticum</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	
3. <u>Chamaenerion angustifolium</u>	<u>20</u>	<u>No</u>	<u>FACU</u>	
4. <u>Rubus stellatus</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	
5. <u>Equisetum arvense</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
6. <u>Trientalis europaea</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>137</u>				
50% of total cover: <u>68.5</u>		20% of total cover: <u>27.4</u>		
Plot size (radius, or length x width) <u>20 x 40 ft</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>0</u>	% Cover of Bryophytes <sup>5</sup> <u>      </u>			
(Where applicable)				

Remarks:

Betula is Betula hybrid. Trace: Bet nan, Poa arc, Dry exp, Ath fil, Pet fri, Pol acu, Ste sit



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi Very moist.
1-2							N/A		hor:Oe Very moist.
2-4	7.5YR 3/2	100					No	Silty Clay Loam	hor:A Very moist.
4-16	10YR 5/3	25	7.5YR 4/6	50	C	PL	No	Silty Clay Loam	hor:B1 *4
4-16	5Y 5/1	25					No	Silty Clay Loam	hor:B1 *5
16-20	10YR 5/3	97	5Y 4/1	3	D	PL	No	Silty Clay Loam	hor:B2 Very little moisture.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:

<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

Restrictive Layer (if present):

Type: <u>None</u>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>
Depth (inches): <u>N/A</u>	
Field Drainage Class: <u>MWD - Moderately Well Drained</u>	

Remarks: Very moist in the top 4 inches. Both B horizons have very little moisture. Alpha-alpha tested on upper part of B1 layer turned pink after several minutes.    \*4: Very little moisture. Redox concentratioons clearly contrasted- not diffuse. \*5: Very little moisture. Redox concentratioons clearly contrasted- not diffuse.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Marl Deposits (B15)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Dry Season Water Table (C2)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches): <u>                    </u>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches): <u>                    </u>	
Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches): <u>                    </u> (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Very moist in upper 4 inches of soil (organic and A layer). Wetter than average conditions due to high antecedent precipitation.

Geomorphic Position:

## Additional Reference Data: Photos

HDR5034\_18



Photo Name: Photo\_180817121557



Photo Name: Photo\_180817121636



Photo Name: Photo\_180817121628



## Additional Reference Data: Photos

HDR5034\_18



**Photo Name:** Photo\_180817121435



**Photo Name:** Photo\_180817121919



**Photo Name:** Photo\_180817121459



## Additional Reference Data: Photos

HDR5034\_18



**Photo Name:** Photo\_180817121615



**Photo Name:** Photo\_180817121444

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/17/2018  
 Applicant/Owner: PLP Sampling Point: HDR5035\_18  
 Investigators: AH, MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 25 HGM: N/A  
 Subregion (LRR): X Lat: 59.870583 Long: -155.163971 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			
Remarks: <u>Wetter than normal antecedent precipitation</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)	
Total Cover: <u>      </u>				Percent of Dominant Species	
50% of total cover: <u>0</u>			20% of total cover: <u>0</u>	That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index worksheet:</b>	
1. <u>Salix pulchra</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by: <u>      </u>	
2. <u>Spiraea stevenii</u>	<u>6</u>	<u>No</u>	<u>FACU</u>	OBL species <u>      </u> x1= <u>      </u>	
3. <u>Salix barclayi</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>2</u> x2= <u>4</u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>125</u> x3= <u>375</u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>20</u> x4= <u>80</u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>	
Total Cover: <u>81</u>				Column Totals: <u>147</u> (A) <u>459</u> (B)	
50% of total cover: <u>40.5</u>			20% of total cover: <u>16.2</u>	<i>Prevalence Index = B/A=</i> <u>3.12</u>	
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>	
1. <u>Calamagrostis canadensis</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%	
2. <u>Equisetum sylvaticum</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Prevalence Index is ≤3.0	
3. <u>Gymnocarpium dryopteris</u>	<u>8</u>	<u>No</u>	<u>FACU</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide	
4. <u>Rubus stellatus</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)	
5. <u>Chamaenerion angustifolium</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
6. <u>Viola epipsila</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
7. <u>Sanguisorba canadensis</u>	<u>2</u>	<u>No</u>	<u>FACW</u>		
8. <u>Trientalis europaea</u>	<u>1</u>	<u>No</u>	<u>FACU</u>		
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>		
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>		
Total Cover: <u>66</u>				<b>Hydrophytic Vegetation Present?</b>	
50% of total cover: <u>33</u>			20% of total cover: <u>13.2</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>			% Bare Ground <u>      </u>		
% Cover of Wetland Bryophytes <u>      </u>		% Cover of Bryophytes <sup>10</sup> <u>      </u>		Yes <u>X</u> No <u>      </u>	
(Where applicable)					
Remarks:					
Trace: Vib edu, Str amp, Equ pra, Aco del, Cor pau, Dry exp, Lyc ann, Moe lat, Car bru					

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oe
3-4							N/A		hor:Oa
4-8	7.5R 2.5/2	100					No	Silt Loam	hor:A
8-12	10YR 4/4	100					No	Silt Loam	hor:B1
12-24	10YR 4/3	100					No	Silty Clay Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: MWD - Moderately Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: No hydric soil indicators observed. Moist in pit from the surface down to 8 inches.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No wetland hydrology indicators observed. Moisture in pit down to 8 inches. Wetter than normal antecedent precipitation.

Geomorphic Position:



## Additional Reference Data: Photos

HDR5035\_18



**Photo Name:** Photo\_180817135038



**Photo Name:** Photo\_180817135054



**Photo Name:** Photo\_180817134926





**Photo Name:** Photo\_180817134851



**Photo Name:** Photo\_180817134943



**Photo Name:** Photo\_180817135010

## Additional Reference Data: Photos

HDR5035\_18

Photo Name: Photo\_180817134908





# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/17/2018  
 Applicant/Owner: PLP Sampling Point: HDR5037\_18  
 Investigators: AH,MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): \_\_\_\_\_ HGM: N/A  
 Subregion (LRR): X Lat: 59.869934 Long: -155.164169 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If No, explain in Remarks)  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ X \_\_\_\_\_ No \_\_\_\_\_  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	

Remarks: Wetter than normal antecedent precipitation. Very steep slope.

## VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species
2. _____	_____	_____	_____	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. _____	_____	_____	_____	Total Number of Dominant
4. _____	_____	_____	_____	Species Across All Strata: <u>3</u> (B)
Total Cover: _____				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____				
OBL species _____ x1= _____ FACW species <u>5</u> x2= <u>10</u> FAC species <u>187</u> x3= <u>561</u> FACU species <u>6</u> x4= <u>24</u> UPL species _____ x5= _____ Column Totals: <u>198</u> (A) <u>595</u> (B)				
Prevalence Index = B/A= <u>3.01</u>				
<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____				

Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix pulchra</u>	<u>75</u>	<u>Yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
Total Cover: <u>75</u>				
50% of total cover: <u>37.5</u>				
20% of total cover: <u>15</u>				

Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Calamagrostis canadensis</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Equisetum arvense</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Anemone richardsonii</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	
4. <u>Chamaenerion angustifolium</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
5. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
6. <u>Rubus stellatus</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
7. <u>Viola epipsila</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
8. <u>Trientalis europaea</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>123</u>				
50% of total cover: <u>61.5</u>				
20% of total cover: <u>24.6</u>				
Plot size (radius, or length x width) <u>20 x 40 ft</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>60</u>				
(Where applicable)				

Remarks:  
 Trace: Spi ste, Pic gla sapling, Emp nig, Vac uli, Bet nan, Rho int, Art arc, Equ sil, Dry exp, Ger eri, Pyr asa, Arnica sp., Moe lat, Ste sit, Rub ped, lichen.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A		hor:Oe
4-18	10YR 3/3	100					No	Sandy Loam	hor:B 30% coarse gravel and cobble.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No wetland hydrology indicators observed. Start of stream (not mapped - SC Plot # 5038 and 5039) about 20 feet below plot location.

Geomorphic Position:

## Additional Reference Data: Photos

HDR5037\_18



**Photo Name:** Photo\_180817150038



**Photo Name:** Photo\_180817150032



**Photo Name:** Photo\_180817150124



## Additional Reference Data: Photos

HDR5037\_18



**Photo Name:** Photo\_180817150105



**Photo Name:** Photo\_180817150132



**Photo Name:** Photo\_180817150117

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/17/2018  
 Applicant/Owner: PLP Sampling Point: HDR5041\_18  
 Investigators: AH, MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 5 HGM: Slope  
 Subregion (LRR): X Lat: 59.869961 Long: -155.163406 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Open Dwarf Birch – Ericaceous Shrub Bog (ODBESB)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks: <u>Wetter than normal antecedent precipitation</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Vaccinium uliginosum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Empetrum nigrum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Rhododendron tomentosum</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	FACW species <u>15</u> x2= <u>30</u>
4. <u>Betula nana</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FAC species <u>139</u> x3= <u>417</u>
5. <u>Salix pulchra</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>Vaccinium vitis-idaea</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>115</u>				Column Totals: <u>154</u> (A) <u>447</u> (B)
50% of total cover: <u>57.5</u>				<u>Prevalence Index = B/A=</u> <u>2.90</u>
20% of total cover: <u>23</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum sylvaticum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Rubus chamaemorus</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Carex bigelowii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Equisetum arvense</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>39</u>				
50% of total cover: <u>19.5</u>				
20% of total cover: <u>7.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>40</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>60</u>				<b>Present?</b>
(Where applicable)				

Remarks: Most of willow on the margin of polygon. Trace: And pol, Vac oxy, Pin vil, lichen.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-13							N/A		hor:Oe
13-14							N/A		hor:Oa
14-16	10YR 4/2	75	5YR 4/6	25	C	PL	No	Sandy Clay Loam	hor:B1
16-22	10YR 4/3	95	5YR 5/6	5	C	PL	No	Silty Clay Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☐ Histosol or Histel (A1)

☒ Histic Epipedon (A2)

☐ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☐ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder

☐ Underlying Layer

☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  
Type: Silty clay loam  
Depth (inches): 14  
Field Drainage Class: SPD - Somewhat Poorly Drained

**Hydric Soil Present?** Yes ☒ No ☐

Remarks: Water observed perching on restrictive layer.

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  

☐ Surface Water (A1)

☐ High Water Table (A2)

☒ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☐ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**  

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☐ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☐ Geomorphic Position (D2)

☒ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☒ FAC-Neutral Test (D5)

**Field Observations:**  
Surface Water Present? Yes ☐ No ☒ Depth (inches):   
Water Table Present? Yes ☐ No ☒ Depth (inches):   
Saturation Present? Yes ☒ No ☐ Depth (inches): 9.0  
(includes capillary fringe)

**Wetland Hydrology Present?** Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Episaturated. Water observed perching on restrictive layer.

Geomorphic Position:





**Photo Name:** Photo\_180817160909



**Photo Name:** Photo\_180817162340



**Photo Name:** Photo\_180817160849





Photo Name: Photo\_180817160835



Photo Name: Photo\_180817160825



Photo Name: Photo\_180817160606



**Photo Name:** Photo\_180817160857



**Photo Name:** Photo\_180817160616



Project/Site:	Pebble 2018	Borough/City:	Lake and Peninsula	Sampling Date:	8/18/2018
Applicant/Owner:	PLP			Sampling Point:	HDR5049_18
Investigators:	AH, MD	Landform (hillslope, terrace, etc.):	Hillside		
Local Relief (concave, convex, none):	None	Slope(%):	9	HGM:	N/A
Subregion (LRR):	X	Lat:	59.885780	Long:	-155.185379
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-6							N/A		hor:Oe
6-7	7.5YR 2.5/2	100					No	Loam	hor:A
7-9	7.5YR 4/3	100					No	Silty Clay Loam	hor:B1 30% medium gravel
9-24	10YR 4/2	70	7.5YR 4/6	30	C	PL	No	Clay Loam	hor:B2 *5

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: Clay loam	
Depth (inches): 9	
Field Drainage Class: MWD - Moderately Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X

Remarks: No hydric soil indicators observed. \*5: Some depletions along pore linings.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Microtopographic Relief (D4)
	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Moist in organic layers, but not saturated in organic or mineral layers. No primary hydro indicators observed. Wetter than normal antecedent precipitation.
Geomorphic Position:

## Additional Reference Data: Photos

HDR5049\_18



Photo Name: Photo\_180818102322



Photo Name: Photo\_180818102054



Photo Name: Photo\_180818105151





Photo Name: Photo\_180818102249



Photo Name: Photo\_180818102312



Photo Name: Photo\_180818102335

## Additional Reference Data: Photos

HDR5049\_18



**Photo Name:** Photo\_180818102305



**Photo Name:** Photo\_180818105111



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/18/2018  
 Applicant/Owner: PLP Sampling Point: HDR5052\_18  
 Investigators: AH, MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): None Slope(%): 14 HGM: N/A  
 Subregion (LRR): X Lat: 59.885078 Long: -155.181244 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks: Wetter than normal antecedent precipitation			

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Salix pulchra</u>	60	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Salix barclayi</u>	15	No	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix glauca</u>	10	No	FAC	FACW species <u>29</u> x2= <u>58</u>
4. <u>Viburnum edule</u>	1	No	FACU	FAC species <u>104</u> x3= <u>312</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>17</u> x4= <u>68</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>86</u>				Column Totals: <u>150</u> (A) <u>438</u> (B)
50% of total cover: <u>43</u>				<u>Prevalence Index = B/A=</u> <u>2.92</u>
20% of total cover: <u>17.2</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum pratense</u>	20	Yes	FACW	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	15	Yes	FAC	<u>X</u> Prevalence Index is ≤3.0
3. <u>Sanguisorba canadensis</u>	8	No	FACW	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Chamaenerion angustifolium</u>	5	No	FACU	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Pyrola asarifolia</u>	5	No	FACU	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Solidago multiradiata</u>	5	No	FACU	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Valeriana capitata</u>	3	No	FAC	
8. <u>Viola epipsila</u>	1	No	FAC	
9. <u>Geranium erianthum</u>	1	No	FACU	
10. <u>Viola glabella</u>	1	No	FACW	
Total Cover: <u>64</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>32</u>				
20% of total cover: <u>12.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>0</u>				
(Where applicable)				
Remarks:				
Trace: Bet nan, Lin bor, Das fru, Pyr min, Art til, Ang luc, Gal bor, Ach mil, Pol acu, Cor sue, Aco del, Her max, Ane ric, Lyc ann, Rub ste, Moe lat, Tri eur, lichen.				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oe
3-6	7.5YR 2.5/2	100					No	Silt Loam	hor:A
6-8	5YR 2.5/2	100					No	Sandy Loam	hor:B
8-13	7.5YR 2.5/1	100					No	Silt Loam	hor:Ab Organic staining common.
13-22	7.5YR 3/3	100					No	Loamy Sand	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: MWD - Moderately Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: No hydric soil indicators observed. Very little moisture in pit.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Microtopographic Relief (D4)
	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Very little moisture in pit. No primary hydrology indicators observed.

Geomorphic Position:

## Additional Reference Data: Photos

HDR5052\_18



Photo Name: Photo\_180818120332



Photo Name: Photo\_180818120351



Photo Name: Photo\_180818120403





Photo Name: Photo\_180818120342



Photo Name: Photo\_180818120357



Photo Name: Photo\_180818120304



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/18/2018</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR5053_18</u>	
Investigators: <u>AH, MD</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>8</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u> Lat: <u>59.885853</u>	Long: <u>-155.180328</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1B</u>	

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: <u>Wetter than normal antecedent precipitation</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>6</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>67</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Vaccinium uliginosum</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>Salix pulchra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>16</u> x2= <u>32</u>
3. <u>Spiraea stevenii</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	FAC species <u>141</u> x3= <u>423</u>
4. <u>Empetrum nigrum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>37</u> x4= <u>148</u>
5. <u>Salix barclayi</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>Betula nana</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	Column Totals: <u>194</u> (A) <u>603</u> (B)
Total Cover: <u>122</u>				<u>Prevalence Index = B/A=</u> <u>3.11</u>
50% of total cover: <u>61</u>				
20% of total cover: <u>24.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	Prevalence Index is ≤3.0
3. <u>Chamaenerion angustifolium</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Galium boreale</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
5. <u>Equisetum arvense</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Festuca altaica</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
7. <u>Achillea millefolium s.l.</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Anemone richardsonii</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Carex bigelowii</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Rubus stellatus</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>72</u>				<b>Hydrophytic</b>
50% of total cover: <u>36</u>				<b>Vegetation</b>
20% of total cover: <u>14.4</u>				Yes <u>X</u> No <u>      </u>
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Present?</b>
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>50</u>				
(Where applicable)				
Remarks: <u>Trace: lichen, Sal ric, Poa arc, Car cap, Vac vit, Sol mul, Aco del, Equ pra, Rho tom, Sal fus, Pol acu, Rho int, Rum arc, Sau ang, Art arc, Com pal, Ang luc, Sax hir, Moe lat, Pyr asa.</u>				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A		hor:Oi
4-7							N/A		hor:Oe
7-8							N/A		hor:Oa
8-20	10YR 3/2	95	10YR 4/6	5	C	PL	No	Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☐ Histosol or Histel (A1)

☒ Histic Epipedon (A2)

☐ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☐ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder

☐ Underlying Layer

☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  
Type: None  
Depth (inches): N/A  
Field Drainage Class: SPD - Somewhat Poorly Drained

**Hydric Soil Present?**    Yes ☐ **X** No ☐

Remarks:

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  

☐ Surface Water (A1)

☒ High Water Table (A2)

☒ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☐ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**  

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☐ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☐ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☐ FAC-Neutral Test (D5)

**Field Observations:**  
Surface Water Present?    Yes ☐ No ☒ **X**    Depth (inches):                       
Water Table Present?    Yes ☒ **X** No ☐    Depth (inches):           12.0            
Saturation Present?    Yes ☒ **X** No ☐    Depth (inches):           2.0            
(includes capillary fringe)

**Wetland Hydrology Present?**    Yes ☐ **X** No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
Thalictrum alpinum	1	No	FAC
Valeriana capitata	1	No	FAC
Viola epipsila	1	No	FAC
Arctagrostis latifolia	1	No	FACW
<b>Sapling/Shrub</b>			
Dasiphora fruticosa	8	No	FAC
Salix reticulata	1	No	FAC

Additional Reference Data: Photos

HDR5053\_18



Photo Name: Photo\_180818123603



Photo Name: Photo\_180818123552



## Additional Reference Data: Photos

HDR5053\_18



**Photo Name:** Photo\_180818123456



**Photo Name:** Photo\_180818123531



**Photo Name:** Photo\_180818123420

## Additional Reference Data: Photos

HDR5053\_18



**Photo Name:** Photo\_180818123538



**Photo Name:** Photo\_180818123547

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/18/2018  
 Applicant/Owner: PLP Sampling Point: HDR5054\_18  
 Investigators: AH, MD Landform (hillslope, terrace, etc.): Hillslope  
 Local Relief (concave, convex, none): Concave Slope(%): 10 HGM: N/A  
 Subregion (LRR): X Lat: 59.869007 Long: -155.162628 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra (DEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Wetter than normal antecedent precipitation. Transitional area with uplands immediately above and wetlands below.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Vaccinium uliginosum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>Empetrum nigrum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>1</u> x2= <u>2</u>
3. <u>Rhododendron tomentosum</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FAC species <u>111</u> x3= <u>333</u>
4. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
5. <u>Salix pulchra</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>112</u> (A) <u>335</u> (B)
Total Cover: <u>96</u>				<u>Prevalence Index = B/A=</u> <u>2.99</u>
50% of total cover: <u>48</u>				
20% of total cover: <u>19.2</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Rubus chamaemorus</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>16</u>				
50% of total cover: <u>8</u>				
20% of total cover: <u>3.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>20</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>65</u>				<b>Present?</b>
(Where applicable)				

Remarks:

Wetland bryophyte is Sphagnum. Trace: lichen, Spi ste, Arc lat, Vac vit, Vac oxy, Sal fus, And pol,



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oe
2-4							N/A		hor:Oa
4-8	2.5Y 5/2	100					No	Loamy Sand	hor:B
8-12	2.5Y 5/2	85	7.5YR 4/6	15	C	PL	No	Silty Clay Loam	hor:B
12-20	2.5Y 5/2	25	10YR 4/4	75	C	PL	No	Silty Clay Loam	hor:B/C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: <u>None</u>	
Depth (inches): <u>N/A</u>	
Field Drainage Class: <u>MWD - Moderately Well Drained</u>	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Remarks: Moist in all layers. No hydric indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>	
Surface Water Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/> Depth (inches): <u>                    </u>	
Water Table Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/> Depth (inches): <u>                    </u>	
Saturation Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/> Depth (inches): <u>                    </u> (includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> X <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Moist in all layers. Some small spots of saturation on loamy sand layer 4-8, but moist (not saturated) above and moist below. This could be water held from recent rain (August 10-12) and the prior period that was wetter than average. Other pits dug in plot (photo points) were not saturated, only moist. Wetter than normal antecedent precipitation.

Geomorphic Position:

## Additional Reference Data: Photos

HDR5054\_18



**Photo Name:** Photo\_180818143740



**Photo Name:** Photo\_180818144139



**Photo Name:** Photo\_180818143911





Photo Name: Photo\_180818143856



Photo Name: Photo\_180818143848



Photo Name: Photo\_180818143732



Photo Name: Photo\_180818143923



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2018 Borough/City: Lake and Peninsula Sampling Date: 8/18/2018  
 Applicant/Owner: PLP Sampling Point: HDR5058\_18  
 Investigators: AH, MD Landform (hillslope, terrace, etc.): Shoulder Slope  
 Local Relief (concave, convex, none): None Slope(%): 4 HGM: N/A  
 Subregion (LRR): X Lat: 59.866783 Long: -155.161484 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Carex (DEST-C)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b> Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Wetter than normal antecedent precipitation. Transitional area with uplands immediately above and wetlands below.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Vaccinium uliginosum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>Rhododendron tomentosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>8</u> x2= <u>16</u>
3. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>105</u> x3= <u>315</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>      </u> x4= <u>      </u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>113</u> (A) <u>331</u> (B)
Total Cover: <u>70</u>				<u>Prevalence Index = B/A=</u> <u>2.93</u>
50% of total cover: <u>35</u>				
20% of total cover: <u>14</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Rubus chamaemorus</u>	<u>8</u>	<u>No</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>43</u>				<b>Hydrophytic</b>
50% of total cover: <u>21.5</u>				<b>Vegetation</b>
20% of total cover: <u>8.6</u>				Yes <u>X</u> No <u>      </u>
Plot size (radius, or length x width) <u>20 x 80 ft</u>				<b>Present?</b>
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>2</u>				
% Cover of Bryophytes <sup>2</sup> <u>      </u>				
(Where applicable)				

Remarks:  
 10% Lichen. Trace: Sal pul, And pol, Sal fus.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A		hor:Oi Moist
5-16							N/A		hor:Oe Very moist
16-20	10YR 4/2	100					No	Clay Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type: None			Yes	No	X
Depth (inches):	N/A				
Field Drainage Class:	MWD - Moderately Well Drained				

Remarks: No evidence of water table or saturation. Oi was moist and the Oe layer was very moist, but not saturated. Climatic conditions in the region were wetter than normal antecedent precipitation at the time this wetland determination was conducted. Additionally, this site visit was conducted during 'peak conditions' when saturation was most likely to be observed in this area (both the Western and Interior subregions). As such, this soil does not meet the A1 or A2 hydric soil indicators. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	Yes	No	X
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No water table or saturation. Oi was moist and the Oe layer was very moist, but not saturated. No primary wetland hydrology indicators observed. Wetter than normal antecedent precipitation.

Geomorphic Position:





Photo Name: Photo\_180818154125



Photo Name: Photo\_180818154115



Photo Name: Photo\_180818154024





Photo Name: Photo\_180818154132



Photo Name: Photo\_180818154139



Photo Name: Photo\_180818154101

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2018</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>8/19/2018</u>
Applicant/Owner: <u>PLP</u>		Sampling Point: <u>HDR5059_18</u>
Investigators: <u>AH, MD</u>	Landform (hillslope, terrace, etc.): <u>Shoulder Slope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>5</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.865555</u>	Long: <u>-155.160599</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
	NWI Classification: <u>U</u>	

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Carex (DEST-C)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>		
Hydric Soil Present? Yes <u>      </u> No <u>X</u>		
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>		

**Is the Sampled Area  
within a Wetland?**

Yes        No X

Remarks: Wetter than normal antecedent precipitation. Transitional area with uplands immediately above and wetlands below.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
	Total Cover: <u>      </u>			Percent of Dominant Species
	50% of total cover: <u>0</u>	20% of total cover: <u>0</u>		That Are OBL, FACW, or FAC: <u>100</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index worksheet:</b>
1. <u>Vaccinium uliginosum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Rhododendron tomentosum</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Empetrum nigrum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>5</u> x2= <u>10</u>
4. <u>Betula nana</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	FAC species <u>140</u> x3= <u>420</u>
5. <u>Vaccinium vitis-idaea</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
	Total Cover: <u>110</u>			Column Totals: <u>145</u> (A) <u>430</u> (B)
	50% of total cover: <u>55</u>	20% of total cover: <u>22</u>		<u>Prevalence Index = B/A=</u> <u>2.97</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Rubus chamaemorus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
	Total Cover: <u>35</u>			
	50% of total cover: <u>17.5</u>	20% of total cover: <u>7</u>		
Plot size (radius, or length x width) <u>20 x 80 ft</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>10</u>		% Cover of Bryophytes <u>10</u>		
(Where applicable)				

**Hydrophytic  
Vegetation  
Present?**

Yes X No       

Remarks:  
15% Lichen. 10% sphagnum.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A		hor:Oi
5-12							N/A		hor:Oe
12-15	10YR 4/3	100					No	Sandy Loam	hor:B1
15-22	2.5Y 5/2	50	7.5YR 5/6	50	C	PL	No	Clay Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes _____ No _____ <u>  X  </u>	
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	MWD - Moderately Well Drained		

Remarks: No evidence of water table or saturation. Oi was moist and the Oe layer was very moist, but not saturated. Mineral layers were also moist, but not saturated. Climatic conditions in the region were wetter than normal antecedent precipitation at the time of this wetland determination was conducted. Additionally, the site visit was conducted during 'peak conditions' when saturation was most likely to be observed in this area (both the Western and Interior subregions). As such, this soil does not meet the A1 or A2 hydric soil indicators. No hydric soil indicators were observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>				<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):		
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):		
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Soil pit was moist, but no saturation. No primary hydrology indicators observed.

Geomorphic Position:

## Additional Reference Data: Photos

HDR5059\_18



Photo Name: Photo\_180818161010



Photo Name: Photo\_180818160942



Photo Name: Photo\_180818160933





Photo Name: Photo\_180818161039



Photo Name: Photo\_180818162648



Photo Name: Photo\_180818161025





Photo Name: Photo\_180818162700



Photo Name: Photo\_180818161049

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/25/2019  
 Applicant/Owner: PLP Sampling Point: HDR7000\_19  
 Investigators: ZH AH Landform (hillslope, terrace, etc.): Swale  
 Local Relief (concave, convex, none): None Slope(%): 3 HGM: N/A  
 Subregion (LRR): X Lat: 59.868134 Long: -155.159241 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>    </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>			
Remarks:					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>    </u> Multiply by:
2. <u>Vaccinium uliginosum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>    </u> x1= <u>    </u>
3. <u>Betula glandulosa</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>    </u> x2= <u>    </u>
4. <u>Rhododendron tomentosum</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FAC species <u>151</u> x3= <u>453</u>
5. <u>Vaccinium vitis-idaea</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FACU species <u>10</u> x4= <u>40</u>
6. <u>Salix pulchra</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	UPL species <u>    </u> x5= <u>    </u>
Total Cover: <u>150</u>				Column Totals: <u>161</u> (A) <u>493</u> (B)
50% of total cover: <u>75</u>				Prevalence Index = B/A= <u>3.06</u>
20% of total cover: <u>30</u>				
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	data in Remarks or on a separate sheet)
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
7. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	must be present, unless disturbed or problematic.
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover: <u>11</u>				
50% of total cover: <u>5.5</u>				
20% of total cover: <u>2.2</u>				
Plot size (radius, or length x width) <u>20 X 20 feet</u>				<b>Hydrophytic</b>
% Bare Ground <u>5</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>    </u>
% Cover of Bryophytes <u>15</u>				<b>Present?</b>
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-4	7.5YR 2.5/2	100					N/A	Sandy Loam	hor:A
4-20	10YR 3/3	40					N/A	Sandy Loam	hor:B/C 10% gravels.
4-20	10YR 4/4	60					N/A	Sandy Loam	hor:B/C 10% gravels.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	WD - Well Drained				
			<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>		

Remarks: Soil profile dry throughout, not moist enough for alpha alpha test. Plot located in low part of hummock.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Saturation Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
(includes capillary fringe)					<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No primary hydro indicators observed. Plot located on side of shallow swale, not considered to meet geomorphic position. No evidence of inundation or saturation in low parts of hummocks.
Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR7000\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Spiraea stevenii	10	No	FACU
Betula nana	5	No	FAC

Additional Reference Data: Photos

HDR7000\_19



Photo Name: Photo\_190625093036



Photo Name: Photo\_190625093217

## Additional Reference Data: Photos

HDR7000\_19



**Photo Name:** Photo\_190625093242



**Photo Name:** Photo\_190625093211



**Photo Name:** Photo\_190625093151

## Additional Reference Data: Photos

HDR7000\_19



**Photo Name:** Photo\_190625093227



**Photo Name:** Photo\_190625093056



Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	6/25/2019
Applicant/Owner:	PLP			Sampling Point:	HDR7001_19
Investigators:	ZH AH	Landform (hillslope, terrace, etc.):	Toeslope		
Local Relief (concave, convex, none):	Concave	Slope(%):	3	HGM:	Slope
Subregion (LRR):	X	Lat:	59.867874	Long:	-155.159332
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	PSS3/EM1B		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.) \_\_\_\_\_

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>			

<u>Tree Stratum</u>		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
Total Cover:				
50% of total cover:		0	20% of total cover:	0
<u>Sapling/Shrub Stratum</u>				
1.	Empetrum nigrum	30	Yes	FAC
2.	Betula nana	15	Yes	FAC
3.	Rhododendron tomentosum	15	Yes	FAC
4.	Vaccinium uliginosum	15	Yes	FAC
5.	Vaccinium oxycoccos	5	No	OBL
6.	Vaccinium vitis-idaea	3	No	FAC
Total Cover:		83		
50% of total cover:		41.5	20% of total cover:	16.6
<u>Herb Stratum</u>				
1.	Rubus chamaemorus	30	Yes	FACW
2.	Carex bigelowii	15	Yes	FAC
3.	Carex aquatilis	10	No	OBL
4.	Eriophorum scheuchzeri	1	No	OBL
5.				
6.				
7.				
8.				
9.				
10.				
Total Cover:		56		
50% of total cover:		28	20% of total cover:	11.2
Plot size (radius, or length x width)		10 X 10 feet	% Bare Ground	0
% Cover of Wetland Bryophytes		50	% Cover of Bryophytes	50
(Where applicable)				

**Dominance Test Worksheet:**

Number of Dominant Species \_\_\_\_\_

That Are OBL, FACW, or FAC:      6      (A)

Total Number of Dominant Species Across All Strata:      6      (B)

Percent of Dominant Species That Are OBL, FACW, or FAC:      100      (A/B)

---

**Prevalence Index Worksheet:**

Total % Cover of:      Multiply by:

OBL species      16      x1=      16

FACW species      30      x2=      60

FAC species      93      x3=      279

FACU species           x4=     

UPL species           x5=     

Column Totals:      139      (A)      355      (B)

Prevalence Index = B/A=      2.55

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**Hydrophytic Vegetation Indicators:**

X Dominance Test is >50%

X Prevalence Index is ≤3.0

Morphological Adaptations<sup>1</sup> (Provide data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

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**Hydrophytic Vegetation Present?**

Yes    X    No    \_\_\_\_\_

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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-16									hor:Oe
16-20	10YR 2/2	100					No	Silt Loam	hor:A *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			<b>Hydric Soil Present?</b>	Yes	<u>  X  </u>	No	<u>          </u>
Type:	<u>  None  </u>						
Depth (inches):	<u>  N/A  </u>						
Field Drainage Class:	<u>  PD - Poorly Drained  </u>						

Remarks: Profile moist but not saturated. Likely saturated in upper 12 inches during wet season. \*3: AA tested but soil likely not moist enough.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input checked="" type="checkbox"/> X Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> X Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> X	No	
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
Water Table Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
Saturation Present? (includes capillary fringe)	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Excavated to 33" in search of dry season water table. Moisture content increased at about 30 inches and continued to increase to near saturated conditions at 33", suggesting presence of dry season water table. Unable to excavate to 40".

Geomorphic Position: Concave depression on slight toe slope. Likely saturated in upper 12 inches during wet season.

## Additional Reference Data: Photos

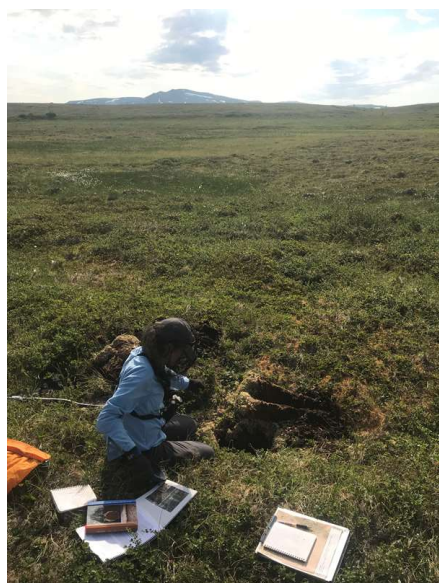
HDR7001\_19



**Photo Name:** Photo\_190625102532



**Photo Name:** Photo\_190625102548



**Photo Name:** Photo\_190625102538



## Additional Reference Data: Photos

HDR7001\_19



**Photo Name:** Photo\_190625102517



**Photo Name:** Photo\_190625102354



**Photo Name:** Photo\_190625102603

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/25/2019  
 Applicant/Owner: PLP Sampling Point: HDR7002\_19  
 Investigators: ZH, AH Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): None Slope(%): 2 HGM: N/A  
 Subregion (LRR): X Lat: 59.867016 Long: -155.156113 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>      </u> Multiply by: OBL species <u>      </u> x1= <u>      </u> FACW species <u>      </u> x2= <u>      </u> FAC species <u>117</u> x3= <u>351</u> FACU species <u>      </u> x4= <u>      </u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>117</u> (A) <u>351</u> (B)  Prevalence Index = B/A= <u>3.00</u>
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<b>Sapling/Shrub Stratum</b>				
1. <u>Empetrum nigrum</u>	40	Yes	FAC	
2. <u>Vaccinium uliginosum</u>	35	Yes	FAC	
3. <u>Betula nana</u>	10	No	FAC	
4. <u>Rhododendron tomentosum</u>	10	No	FAC	
5. <u>Salix pulchra</u>	5	No	FAC	
6. <u>Vaccinium vitis-idaea</u>	2	No	FAC	
Total Cover: <u>102</u>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% X Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover: <u>51</u>		20% of total cover: <u>20.4</u>		
<b>Herb Stratum</b>				
1. <u>Carex bigelowii</u>	15	Yes	FAC	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>15</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>7.5</u>		20% of total cover: <u>3</u>		
Plot size (radius, or length x width) <u>20 X 20 feet</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>1</u>		% Cover of Bryophytes <sup>1</sup> <u>      </u>		
(Where applicable)				
Remarks:				

Lichen 20%.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A		hor:Oi
4-6	7.5YR 2.5/1	100					N/A	Silt Loam	hor:A
6-8	7.5YR 2.5/3	100					N/A	Sandy Loam	hor:A/B
8-14	10YR 4/3	100					N/A	Sandy Loam	hor:B1
14-20	10YR 3/2	40					N/A	Sandy Loam	hor:B2
14-20	10YR 4/3	60					N/A	Sandy Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>		
Field Drainage Class:	WD - Well Drained				

Remarks: No hydric soil indicators observed. Soil profile dry throughout, too dry for alpha alpha test.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>					
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/>	Depth (inches):			
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/>	Depth (inches):			
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/>	Depth (inches):			
(includes capillary fringe)			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary indicators observed.

Geomorphic Position:



## Additional Reference Data: Photos

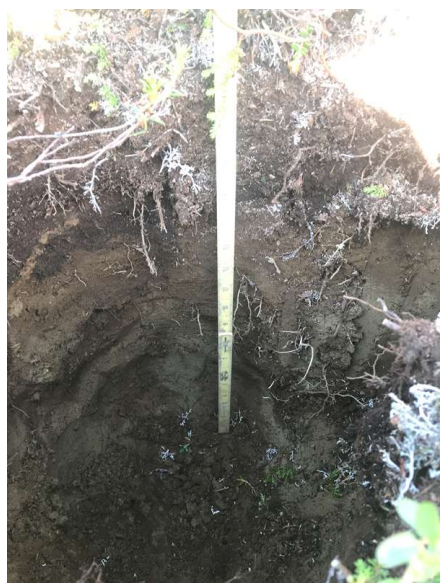
HDR7002\_19



**Photo Name:** Photo\_190625112355



**Photo Name:** Photo\_190625112435



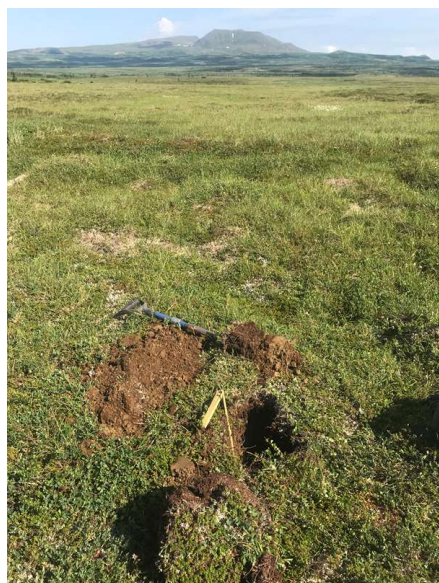
**Photo Name:** Photo\_190625112342

## Additional Reference Data: Photos

HDR7002\_19



**Photo Name:** Photo\_190625112448



**Photo Name:** Photo\_190625112410



**Photo Name:** Photo\_190625112421

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/25/2019  
 Applicant/Owner: PLP Sampling Point: HDR7003\_19  
 Investigators: ZH, AH Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): None Slope(%): 2 HGM: Slope  
 Subregion (LRR): X Lat: 59.867023 Long: -155.155792 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS3/1B

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks:					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Vaccinium uliginosum</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACW species <u>2</u> x2= <u>4</u>
4. <u>Rhododendron tomentosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>115</u> x3= <u>345</u>
5. <u>Vaccinium vitis-idaea</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>Salix pulchra</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>102</u>				Column Totals: <u>117</u> (A) <u>349</u> (B)
50% of total cover: <u>51</u>				<u>Prevalence Index = B/A=</u> <u>2.98</u>
20% of total cover: <u>20.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>15</u>				
50% of total cover: <u>7.5</u>				
20% of total cover: <u>3</u>				
Plot size (radius, or length x width) <u>20 X 20 feet</u>				
% Bare Ground <u>5</u>				
% Cover of Wetland Bryophytes <u>6</u>				
% Cover of Bryophytes <sup>7</sup> <u>      </u>				
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-5							N/A		hor:Oe
5-15	10YR 4/2	93	2.5Y 5/2	2	D	M	No	Sandy Loam	hor:B
5-15			7.5YR 3/3	5	C	PL M	No	Sandy Loam	hor:B
15-20	5Y 4/3	30	10YR 4/6	40	C	PL M	No	Silt Loam	hor:Bg
15-20			N 5/0	30	D	PL M	No	Silt Loam	hor:Bg

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☐ Histosol or Histel (A1)

☐ Histic Epipedon (A2)

☐ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☒ Alaska Redox (A14)

☒ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

Alaska Gleyed Without Hue 5Y or Redder

Underlying Layer

Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  
Type: 

None

Depth (inches): 

N/A

Field Drainage Class: 

SPD - Somewhat Poorly Drained

**Hydric Soil Present?**    Yes    ☒    No    ☐

Remarks:

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)

☐ Surface Water (A1)

☐ High Water Table (A2)

☐ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☐ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**

☒ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☐ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☒ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☒ FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present?    Yes    ☐    No    ☒    Depth (inches):

Water Table Present?    Yes    ☐    No    ☒    Depth (inches):

Saturation Present?    Yes    ☐    No    ☒    Depth (inches):

(includes capillary fringe)

**Wetland Hydrology Present?**    Yes    ☒    No    ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Soil is moist but not saturated. No primary indicators observed, however three secondaries observed; water stained leaves in low hummocks, toeslope landscape position, and positive FAC Neutral. Strong hydric soil indicators also present. Observed saturated lens at silt layer @ 8 inches in additional pit approximately 5 feet from this plot.  
  
Geomorphic Position: Toeslope

Additional Reference Data: Overflow Vegetation

HDR7003\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Andromeda polifolia	2	No	FACW

Additional Reference Data: Photos

HDR7003\_19



Photo Name: Photo\_190625124624



Photo Name: Photo\_190625124636

## Additional Reference Data: Photos

HDR7003\_19



**Photo Name:** Photo\_190625124700



**Photo Name:** Photo\_190625124648



**Photo Name:** Photo\_190625124617



## Additional Reference Data: Photos

HDR7003\_19

**Photo Name:** Photo\_190625124716



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/25/2019  
 Applicant/Owner: PLP Sampling Point: HDR7004\_19  
 Investigators: ZH AH Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): None Slope(%): 3 HGM: Slope  
 Subregion (LRR): X Lat: 59.867611 Long: -155.155563 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS3/1B

Vegetation Type: Dwarf Ericaceous Shrub Tundra (DEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil X or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	40	Yes	FAC	<u>Total % Cover of:</u> <u>    </u> <u>Multiply by:</u> <u>    </u>
2. <u>Vaccinium uliginosum</u>	30	Yes	FAC	OBL species <u>    </u> x1= <u>    </u>
3. <u>Betula nana</u>	10	No	FAC	FACW species <u>1</u> x2= <u>2</u>
4. <u>Rhododendron tomentosum</u>	10	No	FAC	FAC species <u>115</u> x3= <u>345</u>
5. <u>Vaccinium vitis-idaea</u>	5	No	FAC	FACU species <u>    </u> x4= <u>    </u>
6. <u>Salix pulchra</u>	3	No	FAC	UPL species <u>    </u> x5= <u>    </u>
Total Cover: <u>104</u>				Column Totals: <u>116</u> (A) <u>347</u> (B)
50% of total cover: <u>52</u>				<i>Prevalence Index = B/A = 2.99</i>
20% of total cover: <u>20.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	15	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	data in Remarks or on a separate sheet)
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover: <u>15</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>    </u>
50% of total cover: <u>7.5</u>				
20% of total cover: <u>3</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>5</u>				
% Cover of Wetland Bryophytes <u>5</u> (Where applicable)		% Cover of Bryophytes <u>15</u>		
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi *1
3-6									hor:Oe *2
6-7	10YR 3/2	100						Silt Loam	hor:A *3
7-16	10YR 3/3	30					N/A	Very Fine Sandy	hor:B1 *4
7-16	7.5YR 3/4	70					N/A	Very Fine Sandy	hor:B1 *5
16-20	2.5Y 4/2	88	10YR 4/4	10	C	PL	N/A	Silt Loam	hor:B2
16-20			7.5YR 4/6	2	C	M	N/A	Silt Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

<b>Hydric Soil Indicators:</b>	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: SPD - Somewhat Poorly Drained	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Remarks: 2.5Y layer begins within 12 inches of the mineral surface. No primary hydrology indicator observed but due to geomorphic position the site is likely saturated in the upper 12 inches of the soil profile under normal precipitation conditions. \*1: Wavy boundary between 1-3 inches. \*2: Total organic layers wavy between 2 and 6 inches. \*3: Wavy boundary. Between 3 and 6 inches. \*4: 1" seam of 2.5Y 4/2 with 2% redox concentrations 7.5YR 4/6 \*5: 1" seam of 2.5Y 4/2 with 2% redox concentrations 7.5YR 4/6

HYDROLOGY

<b>Wetland Hydrology Indicators:</b>	<b>Secondary Indicators (2 or more required)</b>
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Microtopographic Relief (D4)
	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
(includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Two secondary hydrology indicators observed. Moist at 20.  
  
Geomorphic Position: Toeslope



Additional Reference Data: Overflow Vegetation

HDR7004\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Salix sp.	3	No	N/A
Betula glandulosa	2	No	FAC
Andromeda polifolia	1	No	FACW

Additional Reference Data: Photos

HDR7004\_19



Photo Name: Photo\_190625140632



Photo Name: Photo\_190625140716



**Photo Name:** Photo\_190625140655



**Photo Name:** Photo\_190625140644



**Photo Name:** Photo\_190625140618

## Additional Reference Data: Photos

HDR7004\_19

**Photo Name:** Photo\_190625140705





# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/25/2019  
 Applicant/Owner: PLP Sampling Point: HDR7005\_19  
 Investigators: ZH AH Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): None Slope(%): 1 HGM: N/A  
 Subregion (LRR): X Lat: 59.867687 Long: -155.155823 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Carex (DEST-C)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>    </u> <u>Multiply by:</u> <u>    </u>
2. <u>Rhododendron tomentosum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>    </u> x1= <u>    </u>
3. <u>Vaccinium uliginosum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>27</u> x2= <u>54</u>
4. <u>Betula nana</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FAC species <u>147</u> x3= <u>441</u>
5. <u>Betula glandulosa</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACU species <u>    </u> x4= <u>    </u>
6. <u>Vaccinium vitis-idaea</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	UPL species <u>    </u> x5= <u>    </u>
Total Cover: <u>119</u>				Column Totals: <u>174</u> (A) <u>495</u> (B)
50% of total cover: <u>59.5</u>				<u>Prevalence Index = B/A=</u> <u>2.84</u>
20% of total cover: <u>23.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Rubus chamaemorus</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u> data in Remarks or on a separate sheet)
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
7. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	must be present, unless disturbed or problematic.
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover: <u>55</u>				
50% of total cover: <u>27.5</u>				
20% of total cover: <u>11</u>				
Plot size (radius, or length x width) <u>10 X 10 feet</u>				<b>Hydrophytic</b>
% Bare Ground <u>2</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>    </u>
% Cover of Bryophytes <u>20</u>				<b>Present?</b>
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-9	10YR 2/2	100					N/A	Silt Loam	hor:A
9-20	7.5YR 2.5/3	100					N/A	Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: Soil profile too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<u>      </u>	No	<u>  X  </u>	Depth (inches):	<u>  </u>			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Hydrology met through secondary indicators only.

Geomorphic Position: Toeslope

Additional Reference Data: Overflow Vegetation

HDR7005\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Salix pulchra	2	No	FAC
Andromeda polifolia	2	No	FACW

Additional Reference Data: Photos

HDR7005\_19



Photo Name: Photo\_190625142920



Photo Name: Photo\_190625143036



## Additional Reference Data: Photos

HDR7005\_19



**Photo Name:** Photo\_190625143006



**Photo Name:** Photo\_190625142942



**Photo Name:** Photo\_190625142954

Photo Name: Photo\_190625143021



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/25/2019  
 Applicant/Owner: PLP Sampling Point: HDR7006\_19  
 Investigators: ZH AH Landform (hillslope, terrace, etc.): Kettle  
 Local Relief (concave, convex, none): Concave Slope(%): 5 HGM: N/A  
 Subregion (LRR): X Lat: 59.865150 Long: -155.138580 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Bluejoint Herb (BH)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>    </u>	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover:	<u>    </u>			<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>    </u> Multiply by: OBL species <u>    </u> x1= <u>    </u> FACW species <u>5</u> x2= <u>10</u> FAC species <u>59</u> x3= <u>177</u> FACU species <u>20</u> x4= <u>80</u> UPL species <u>    </u> x5= <u>    </u> Column Totals: <u>84</u> (A) <u>267</u> (B)  Prevalence Index = B/A= <u>3.18</u>
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	
<b>Sapling/Shrub Stratum</b>				
1. <u>Empetrum nigrum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Spiraea stevenii</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Vaccinium vitis-idaea</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover:	<u>21</u>			
50% of total cover:	<u>10.5</u>	20% of total cover:	<u>4.2</u>	
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <u>    </u> No <u>    </u> X <u>    </u>
1. <u>Calamagrostis canadensis</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Chamaenerion angustifolium</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Carex bigelowii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
4. <u>Rubus chamaemorus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
5. <u>Aconitum delphinifolium</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
7. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover:	<u>63</u>			
50% of total cover:	<u>31.5</u>	20% of total cover:	<u>12.6</u>	
Plot size (radius, or length x width) <u>10 X 10 feet</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>20</u> dried up moss		
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-2	10YR 2/1	100					N/A	Loamy Sand	hor:A
2-18	10YR 2/2	100					N/A	Loamy Sand	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes _____ No _____ <u>  X  </u>	
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		

Remarks: Soil profile too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input type="checkbox"/> FAC-Neutral Test (D5)		

<b>Field Observations:</b>						<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?	Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> X	Depth (inches):		
Saturation Present?	Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> X	Depth (inches):		
(includes capillary fringe)						

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary indicators observed. Plot located on slope above kettle bottom.

Geomorphic Position:

## Additional Reference Data: Photos

HDR7006\_19



**Photo Name:** Photo\_190625152930



**Photo Name:** Photo\_190625153022



**Photo Name:** Photo\_190625152843



**Photo Name:** Photo\_190625152947



**Photo Name:** Photo\_190625152901



**Photo Name:** Photo\_190625153008



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/26/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7008_19</u>	
Investigators: <u>ZH, AH</u>	Landform (hillslope, terrace, etc.): <u>Kettle</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>5</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.866604</u>	Long: <u>-155.130905</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Bluejoint Herb (BH)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Betula nana</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>15</u> <u>Multiply by:</u> <u>15</u>
2. <u>Salix pulchra</u>	<u>3</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>15</u> x1= <u>15</u>
3. <u>Vaccinium uliginosum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACW species <u>5</u> x2= <u>10</u>
4. <u>Sibbaldia procumbens</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	FAC species <u>45</u> x3= <u>135</u>
5. <u>Spiraea stevenii</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	FACU species <u>9</u> x4= <u>36</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>12</u>				Column Totals: <u>74</u> (A) <u>196</u> (B)
50% of total cover: <u>6</u>				<u>Prevalence Index = B/A=</u> <u>2.65</u>
20% of total cover: <u>2.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex canescens</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Carex bigelowii</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Epilobium angustifolium</u>	<u>7</u>	<u>No</u>	<u>FACU</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Rubus chamaemorus</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Sanguisorba canadensis</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
7. <u>Viola sp.</u>	<u>2</u>	<u>No</u>	<u>N/A</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Juncus triglumis</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>64</u>				<b>Hydrophytic Vegetation Present?</b>  Yes <u>X</u> No <u>      </u>
50% of total cover: <u>32</u>				
20% of total cover: <u>12.8</u>				
Plot size (radius, or length x width) <u>20 X 15 feet</u>				
% Bare Ground <u>15</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <sup>7</sup> <u>      </u>				
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3	7.5YR 3/2	100					N/A	Fine Sandy Loam	hor:A
3-11	7.5YR 2.5/2	100					N/A	Sandy Loam	hor:B/C 30% coarse gravel.
11-18	10YR 3/3	100					N/A	Coarse Sandy	hor:B/C 50% coarse gravel.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	MWD - Moderately Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: Plot located in lowest point in polygon. Soil profile dry throughout, too dry for alpha alpha test.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>					
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
(includes capillary fringe)			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No primary indicators observed. Positive hydrology due to secondary indicators.
Geomorphic Position: Kettle depression

## Additional Reference Data: Photos

HDR7008\_19



**Photo Name:** Photo\_190625164958



**Photo Name:** Photo\_190625165021



**Photo Name:** Photo\_190625165048



## Additional Reference Data: Photos

HDR7008\_19



**Photo Name:** Photo\_190625165031



**Photo Name:** Photo\_190625164952

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/26/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7009_19</u>	
Investigators: <u>ZH AH</u>	Landform (hillslope, terrace, etc.): <u>Kettle</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>2</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.886040</u>	Long: <u>-154.997131</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Tall Shrub (OWTS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>      </u> Multiply by: OBL species <u>      </u> x1= <u>      </u> FACW species <u>      </u> x2= <u>      </u> FAC species <u>103</u> x3= <u>309</u> FACU species <u>28</u> x4= <u>112</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>131</u> (A) <u>421</u> (B)  Prevalence Index = B/A= <u>3.21</u>
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix pulchra</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Spiraea stevenii</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Ribes glandulosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>50</u>				
50% of total cover: <u>25</u>		20% of total cover: <u>10</u>		
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.          <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
1. <u>Calamagrostis canadensis</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Chamaenerion angustifolium</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	
3. <u>Equisetum sylvaticum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
4. <u>Cornus suecica</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
5. <u>Rubus pedatus</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
6. <u>Dryopteris expansa</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
7. <u>Equisetum arvense</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
8. <u>Polemonium acutiflorum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>81</u>				
50% of total cover: <u>40.5</u>		20% of total cover: <u>16.2</u>		
Plot size (radius, or length x width) <u>15 X 15 feet</u> % Bare Ground <u>0</u> % Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>0</u> (Where applicable)				

Remarks:

15% standing dead white spruce, signs of porcupine activity nearby.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-2	10YR 3/2	100					N/A	Silt Loam	hor:A
2-20	10YR 3/3	100					N/A	Fine Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes _____ No _____ <u>X</u>	
Type:	<u>None</u>		
Depth (inches):	<u>N/A</u>		
Field Drainage Class:	<u>WD - Well Drained</u>		

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input type="checkbox"/> FAC-Neutral Test (D5)		

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X		
Surface Water Present?	Yes	No	<input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes	No	<input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present?	Yes	No	<input checked="" type="checkbox"/>	Depth (inches):	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:



## Additional Reference Data: Photos

HDR7009\_19



**Photo Name:** Photo\_190626083642



**Photo Name:** Photo\_190626083626



**Photo Name:** Photo\_190626083721

## Additional Reference Data: Photos

HDR7009\_19



**Photo Name:** Photo\_190626083710



**Photo Name:** Photo\_190626083656



**Photo Name:** Photo\_190626083611

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/26/2019  
 Applicant/Owner: PLP Sampling Point: HDR7010\_19  
 Investigators: ZH, AH Landform (hillslope, terrace, etc.): Kettle  
 Local Relief (concave, convex, none): None Slope(%): 2 HGM: N/A  
 Subregion (LRR): X Lat: 59.886059 Long: -154.997574 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
<b>Tree Stratum</b>				Number of Dominant Species
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>4</u> (B)
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Percent of Dominant Species
Total Cover: <u>    </u>				That Are OBL, FACW, or FAC: <u>75</u> (A/B)
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		<b>Prevalence Index Worksheet:</b>
<b>Sapling/Shrub Stratum</b>				<u>Total % Cover of:</u> <u>    </u> <u>Multiply by:</u> <u>    </u>
1. <u>Salix pulchra</u>	<u>75</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>    </u> x1= <u>    </u>
2. <u>Ribes glandulosum</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	FACW species <u>    </u> x2= <u>    </u>
3. <u>Vaccinium uliginosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>135</u> x3= <u>405</u>
4. <u>Betula glandulosa</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	FACU species <u>26</u> x4= <u>104</u>
5. <u>Spiraea stevenii</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	UPL species <u>1</u> x5= <u>5</u>
6. <u>Linnaea borealis</u>	<u>1</u>	<u>No</u>	<u>UPL</u>	Column Totals: <u>162</u> (A) <u>514</u> (B)
Total Cover: <u>90</u>				<u>Prevalence Index = B/A=</u> <u>3.17</u>
50% of total cover: <u>45</u>		20% of total cover: <u>18</u>		<b>Hydrophytic Vegetation Indicators:</b>
<b>Herb Stratum</b>				<u>X</u> Dominance Test is >50%
1. <u>Equisetum arvense</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>    </u> Prevalence Index is ≤3.0
2. <u>Epilobium angustifolium</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	<u>    </u> Morphological Adaptations <sup>1</sup> (Provide
3. <u>Equisetum sylvaticum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
4. <u>Rubus arcticus s.l.</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>Calamagrostis canadensis</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. <u>Trientalis europaea</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
7. <u>Polemonium acutiflorum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
8. <u>Heracleum maximum</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
9. <u>Athyrium cyclosorum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Pyrola minor</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>72</u>				<b>Hydrophytic Vegetation Present?</b>
50% of total cover: <u>36</u>		20% of total cover: <u>14.4</u>		Yes <u>X</u> No <u>    </u>
Plot size (radius, or length x width) <u>20 X 20 feet</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <sup>3</sup> <u>    </u>		
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-2	10YR 3/2	100					N/A	Silt Loam	hor:A
2-17	7.5YR 3/3	100					N/A	Sandy Loam	hor:B1
17-20	10YR 4/2	100					N/A	Fine Sandy Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:

## Additional Reference Data: Photos

HDR7010\_19



**Photo Name:** Photo\_190626093000



**Photo Name:** Photo\_190626093018



**Photo Name:** Photo\_190626093033

## Additional Reference Data: Photos

HDR7010\_19



**Photo Name:** Photo\_190626093009



**Photo Name:** Photo\_190626092932



**Photo Name:** Photo\_190626093026



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/26/2019  
 Applicant/Owner: PLP Sampling Point: HDR7011\_19  
 Investigators: ZH AH Landform (hillslope, terrace, etc.): Hillside  
 Local Relief (concave, convex, none): None Slope(%): 15 HGM: N/A  
 Subregion (LRR): X Lat: 59.884251 Long: -155.001282 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83</u> (A/B)
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover:	<u>    </u>			
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b> <u>Total % Cover of:</u> <u>    </u> <u>Multiply by:</u> <u>    </u> OBL species <u>    </u> x1= <u>    </u> FACW species <u>85</u> x2= <u>170</u> FAC species <u>29</u> x3= <u>87</u> FACU species <u>24</u> x4= <u>96</u> UPL species <u>    </u> x5= <u>    </u> Column Totals: <u>138</u> (A) <u>353</u> (B)  <i>Prevalence Index = B/A=</i> <u>2.56</u>
1. <u>Salix richardsonii</u>	<u>75</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Viburnum edule</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover:	<u>90</u>			
50% of total cover:	<u>45</u>	20% of total cover:	<u>18</u>	
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% X Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
1. <u>Calamagrostis canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Sanguisorba canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Aconitum delphinifolium</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Rubus pedatus</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
5. <u>Heracleum maximum</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	
6. <u>Equisetum arvense</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
7. <u>Pyrola minor</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
8. <u>Streptopus amplexifolius</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
9. <u>Trientalis europaea</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
10. <u>Viola sp.</u>	<u>2</u>	<u>No</u>	<u>N/A</u>	
Total Cover:	<u>50</u>			
50% of total cover:	<u>25</u>	20% of total cover:	<u>10</u>	
Plot size (radius, or length x width) <u>10 X 10 feet</u> % Bare Ground <u>10</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>    </u>
% Cover of Wetland Bryophytes <u>0</u> (Where applicable)		% Cover of Bryophytes <sup>5</sup> <u>    </u>		
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-6	10YR 2/1	100					N/A	Loam	hor:A
6-10	10YR 3/2	100					N/A	Sandy Loam	hor:B1 Patches of organic staining.
10-20	7.5YR 3/3	100					N/A	Sandy Loam	hor:B2 Patches of organic staining.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes _____ No _____ <u>X</u>	
Type:	<u>None</u>		
Depth (inches):	<u>N/A</u>		
Field Drainage Class:	<u>WD - Well Drained</u>		

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary hydro indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7011\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Achillea millefolium s.l.	1	No	FACU

Additional Reference Data: Photos

HDR7011\_19



Photo Name: Photo\_190626103926



Photo Name: Photo\_190626103937



## Additional Reference Data: Photos

HDR7011\_19



**Photo Name:** Photo\_190626103848



**Photo Name:** Photo\_190626103953



**Photo Name:** Photo\_190626103945

## Additional Reference Data: Photos

HDR7011\_19

Photo Name: Photo\_190626103908



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/26/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7012_19</u>	
Investigators: <u>ZH, AH</u>	Landform (hillslope, terrace, etc.): <u>Swale</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>3</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.884129</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>U</u>	

Vegetation Type: Bluejoint Herb (BH)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Salix pulchra</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Salix arbusculoides</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>2</u> x2= <u>4</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>98</u> x3= <u>294</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>5</u> x4= <u>20</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>12</u>				Column Totals: <u>105</u> (A) <u>318</u> (B)
50% of total cover: <u>6</u>				Prevalence Index = B/A= <u>3.03</u>
20% of total cover: <u>2.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Equisetum sylvaticum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Viola sp.</u>	<u>5</u>	<u>No</u>	<u>N/A</u>	data in Remarks or on a separate sheet)
5. <u>Angelica lucida</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Aconitum delphinifolium</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Athyrium cyclosorum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
8. <u>Streptopus amplexifolius</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
9. <u>Dryopteris expansa</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
10. <u>Heracleum maximum</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>99</u>				<b>Hydrophytic Vegetation Present?</b>
50% of total cover: <u>49.5</u>				
20% of total cover: <u>19.8</u>				
Plot size (radius, or length x width) <u>20 X 20 feet</u>				Yes <u>X</u> No <u>      </u>
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>0</u>				
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-3	10YR 2/1	100					N/A	Silt Loam	hor:A
3-20	7.5YR 3/2	100					N/A	Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes _____ No _____ X _____	
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input type="checkbox"/> FAC-Neutral Test (D5)		

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Saturation Present? (includes capillary fringe)	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary hydrology indicators observed

Geomorphic Position: Swale

Additional Reference Data: Overflow Vegetation

HDR7012\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Thalictrum sparsiflorum	1	No	FACU
Brassica sp.	1	No	N/A

Additional Reference Data: Photos

HDR7012\_19



Photo Name: Photo\_190626112536



Photo Name: Photo\_190626112613

## Additional Reference Data: Photos

HDR7012\_19



**Photo Name:** Photo\_190626112559



**Photo Name:** Photo\_190626112641



**Photo Name:** Photo\_190626112623



## Additional Reference Data: Photos

HDR7012\_19

Photo Name: Photo\_190626112543



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/26/2019  
 Applicant/Owner: PLP Sampling Point: HDR7014\_19  
 Investigators: ZH AH Landform (hillslope, terrace, etc.): Kettle  
 Local Relief (concave, convex, none): Concave Slope(%): 3 HGM: N/A  
 Subregion (LRR): X Lat: 59.883801 Long: -155.003326 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>80</u> (A/B)
20% of total cover: <u>0</u>				
				<b>Prevalence Index Worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>    </u> <u>Multiply by:</u> <u>    </u>
1. <u>Vaccinium uliginosum</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>1</u> x1= <u>1</u>
2. <u>Empetrum nigrum</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>1</u> x2= <u>2</u>
3. <u>Vaccinium vitis-idaea</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FAC species <u>143</u> x3= <u>429</u>
4. <u>Arctous rubra</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>20</u> x4= <u>80</u>
5. <u>Rhododendron tomentosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	UPL species <u>3</u> x5= <u>15</u>
6. <u>Picea glauca</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	Column Totals: <u>168</u> (A) <u>527</u> (B)
Total Cover: <u>140</u>				<u>Prevalence Index = B/A=</u> <u>3.14</u>
50% of total cover: <u>70</u>				
20% of total cover: <u>28</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Chamaenerion angustifolium</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>    </u> Prevalence Index is ≤3.0
3. <u>Rubus pedatus</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>    </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex bigelowii</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<u>    </u> data in Remarks or on a separate sheet)
5. <u>Festuca altaica</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Artemisia arctica</u>	<u>3</u>	<u>No</u>	<u>NL</u>	
7. <u>Streptopus amplexifolius</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Trientalis europaea</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	must be present, unless disturbed or problematic.
9. <u>Sanguisorba canadensis</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
10. <u>Pedicularis sp.</u>	<u>1</u>	<u>No</u>	<u>N/A</u>	
Total Cover: <u>34</u>				<b>Hydrophytic Vegetation Present?</b>  Yes <u>X</u> No <u>    </u>
50% of total cover: <u>17</u>				
20% of total cover: <u>6.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u> % Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>40</u> (Where applicable)				
Remarks:				

Pic. gla. (tree at 3%) moved to shrub stratum due to less than 5% overall cover in the tree stratum.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-2	7.5YR 2.5/2	100					N/A	Sandy Loam	hor:A *2
2-20	7.5YR 2.5/3	100					N/A	Silt Loam	hor:B *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	No	X
Depth (inches):	N/A				
Field Drainage Class:	WD - Well Drained				

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed. \*2: Thin band organic staining beneath layer. \*3: Small inclusion of 7.5YR 2/2 silt loam.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:							
Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>	
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>	
Saturation Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>	
(includes capillary fringe)							

Wetland Hydrology Present?			Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary hydrology indicators observed.

Geomorphic Position: Depression.



Additional Reference Data: Overflow Vegetation

HDR7014\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
Carex canescens	1	No	OBL
<b>Sapling/Shrub</b>			
Salix sp.	5	No	N/A
Betula glandulosa	3	No	FAC
Salix pulchra	3	No	FAC
Picea glauca (tree)	3	No	FACU
Betula papyrifera s.l.	1	No	FACU

Additional Reference Data: Photos

HDR7014\_19



Photo Name: Photo\_190626130026



Photo Name: Photo\_190626130222

## Additional Reference Data: Photos

HDR7014\_19



**Photo Name:** Photo\_190626130300



**Photo Name:** Photo\_190626130243



**Photo Name:** Photo\_190626130312



Photo Name: Photo\_190626130322



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/26/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7015_19</u>	
Investigators: <u>ZH AH</u>	Landform (hillslope, terrace, etc.): <u>Valleybottom</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>2</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.881340</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>U</u>	

Vegetation Type: Open Willow Tall Shrub (OWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	

Remarks: Polygon slopes uphill to northeast. Plot taken at lowest point in poly.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>60</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index Worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Salix richardsonii</u>	<u>70</u>	<u>Yes</u>	<u>FACW</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>Ribes glandulosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACW species <u>77</u> x2= <u>154</u>
3. <u>Spiraea stevenii</u>	<u>4</u>	<u>No</u>	<u>FACU</u>	FAC species <u>48</u> x3= <u>144</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>41</u> x4= <u>164</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>166</u> (A) <u>462</u> (B)
Total Cover: <u>84</u>				<u>Prevalence Index = B/A=</u> <u>2.78</u>
50% of total cover: <u>42</u>				
20% of total cover: <u>16.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Gymnocarpium dryopteris</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Heracleum maximum</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Geranium erianthum</u>	<u>7</u>	<u>No</u>	<u>FACU</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Sanguisorba canadensis</u>	<u>7</u>	<u>No</u>	<u>FACW</u>	
7. <u>Equisetum sylvaticum</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Thalictrum sparsiflorum</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	must be present, unless disturbed or problematic.
9. <u>Rubus arcticus s.l.</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
10. <u>Trientalis europaea</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>83</u>				
50% of total cover: <u>41.5</u>				
20% of total cover: <u>16.6</u>				
Plot size (radius, or length x width) <u>20 X 20 feet</u>				
% Bare Ground <u>5</u>				
% Cover of Wetland Bryophytes <u>0</u> (Where applicable)         % Cover of Bryophytes <sup>5</sup> <u>      </u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-4	7.5YR 2.5/2	100					N/A	Silt Loam	hor:A
4-8	7.5YR 3/4	100					N/A	Silt Loam	hor:B
8-18	7.5YR 3/2	100					N/A	Silt Loam	hor:B/C 30% gravels

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7015\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Aconitum delphiniifolium	1	No	FAC
Stellaria longipes	1	No	FAC
Valeriana capitata	1	No	FAC
Pyrola sp.	1	No	N/A

Additional Reference Data: Photos

HDR7015\_19



Photo Name: Photo\_190626142208



Photo Name: Photo\_190626142123



## Additional Reference Data: Photos

HDR7015\_19



**Photo Name:** Photo\_190626142217



**Photo Name:** Photo\_190626142226



**Photo Name:** Photo\_190626142235

## Additional Reference Data: Photos

HDR7015\_19

**Photo Name:** Photo\_190626142244



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/26/2019  
 Applicant/Owner: PLP Sampling Point: HDR7016\_19  
 Investigators: ZH AH Landform (hillslope, terrace, etc.): Mound  
 Local Relief (concave, convex, none): Convex Slope(%): 3 HGM: N/A  
 Subregion (LRR): X Lat: 59.880966 Long: -155.010895 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Willow Tall Shrub (OWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>	

Remarks:

## VEGETATION – Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index Worksheet:</b>				
Total % Cover of:		Multiply by:		
OBL species	<u>    </u>	x1= <u>    </u>		
FACW species	<u>73</u>	x2= <u>146</u>		
FAC species	<u>89</u>	x3= <u>267</u>		
FACU species	<u>24</u>	x4= <u>96</u>		
UPL species	<u>1</u>	x5= <u>5</u>		
Column Totals:	<u>187</u> (A)	<u>514</u> (B)		
Prevalence Index = B/A=				<u>2.75</u>
<b>Hydrophytic Vegetation Indicators:</b>				
X	Dominance Test is >50%			
X	Prevalence Index is ≤3.0			
Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)				
Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>    </u>				

Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix richardsonii</u>	<u>70</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Salix pulchra</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
3. <u>Ribes sp.</u>	<u>3</u>	<u>No</u>	<u>N/A</u>	
4. <u>Populus balsamifera</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
5. <u>Linnaea borealis</u>	<u>1</u>	<u>No</u>	<u>UPL</u>	
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover: <u>78</u>				
50% of total cover: <u>39</u>				
20% of total cover: <u>15.6</u>				
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Equisetum sylvaticum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
3. <u>Gymnocarpium dryopteris</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
4. <u>Chamaenerion angustifolium</u>	<u>7</u>	<u>No</u>	<u>FACU</u>	
5. <u>Equisetum arvense</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
6. <u>Dryopteris expansa</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
7. <u>Trientalis europaea</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
8. <u>Sanguisorba canadensis</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	
9. <u>Rubus pedatus</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover: <u>112</u>				
50% of total cover: <u>56</u>				
20% of total cover: <u>22.4</u>				
Plot size (radius, or length x width) <u>20 X 20 feet</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>0</u>				
(Where applicable)				

Remarks:



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-2	10YR 2/2	100					N/A	Silt Loam	hor:A
2-3	10YR 4/2	100					N/A	Silt Loam	hor:C Possible weak ash layer.
3-18	10YR 4/4	100					N/A	Sandy Loam	hor:B1
18-20	10YR 4/3	100					N/A	Silt Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	WD - Well Drained				

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		X <input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<u>      </u>	No	<u>      </u> X	Depth (inches):	<u>  </u>			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary hydrology indicators observed.

Geomorphic Position:

## Additional Reference Data: Photos

HDR7016\_19



**Photo Name:** Photo\_190626151643



**Photo Name:** Photo\_190626151733



**Photo Name:** Photo\_190626151703

## Additional Reference Data: Photos

HDR7016\_19



**Photo Name:** Photo\_190626151722



**Photo Name:** Photo\_190626151655



**Photo Name:** Photo\_190626151712



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/26/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7017_19</u>	
Investigators: <u>ZH AH</u>	Landform (hillslope, terrace, etc.): <u>Kettle</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>3</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.883881</u>	Long: <u>-155.012589</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks:	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>80</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	45	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Ledum decumbens</u>	20	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium uliginosum</u>	10	No	FAC	FACW species <u>      </u> x2= <u>      </u>
4. <u>Vaccinium vitis-idaea</u>	10	No	FAC	FAC species <u>96</u> x3= <u>288</u>
5. <u>Betula nana</u>	2	No	FAC	FACU species <u>6</u> x4= <u>24</u>
6. <u>Picea glauca</u>	2	No	FACU	UPL species <u>1</u> x5= <u>5</u>
Total Cover: <u>90</u>				Column Totals: <u>103</u> (A) <u>317</u> (B)
50% of total cover: <u>45</u>				<u>Prevalence Index = B/A =</u> <u>3.08</u>
20% of total cover: <u>18</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	3	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Chamaenerion angustifolium</u>	3	Yes	FACU	<u>      </u> Prevalence Index is ≤3.0
3. <u>Festuca altaica</u>	2	Yes	FAC	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Calamagrostis canadensis</u>	1	No	FAC	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Iris setosa</u>	1	No	FAC	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Rubus arcticus s.l.</u>	1	No	FAC	
7. <u>Viola epipsila</u>	1	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Artemisia arctica</u>	1	No	NL	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>13</u>				
50% of total cover: <u>6.5</u>				
20% of total cover: <u>2.6</u>				
Plot size (radius, or length x width) <u>10 X 10 feet</u>				<b>Hydrophytic</b>
% Bare Ground <u>3</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <sup>3</sup> <u>      </u>				<b>Present?</b>
(Where applicable)				
Remarks:				

Medium hummocks. Lichen 50%.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-12	7.5YR 2.5/2	100					N/A	Fine Sandy Loam	hor:A/B
12-19	7.5YR 3/3	100					N/A	Fine Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	WD - Well Drained				

Remarks: Dry throughout pit, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Saturation Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
(includes capillary fringe)									
					<b>Wetland Hydrology Present?</b>	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary indicators observed

Geomorphic Position: Kettle depression

Additional Reference Data: Overflow Vegetation

HDR7017\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Spiraea stevenii</u>	<u>1</u>	<u>No</u>	<u>FACU</u>

Additional Reference Data: Photos

HDR7017\_19



Photo Name: Photo\_190626161840



Photo Name: Photo\_190626161918



## Additional Reference Data: Photos

HDR7017\_19



**Photo Name:** Photo\_190626161852



**Photo Name:** Photo\_190626161906



**Photo Name:** Photo\_190626161945



Photo Name: Photo\_190626161935

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/27/2019</u>
Applicant/Owner: <u>PLP</u>		Sampling Point: <u>HDR7018_19</u>
Investigators: <u>ZH, AH</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>7</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.881470</u>	Long: <u>-155.014069</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS3/1B</u>	Datum: <u>WGS84</u>

Vegetation Type: Dwarf White Spruce Scrub (DWSS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>		
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u>      </u>	

Remarks: Transitional area between upland WSW located up slope and wetland ODBESB located down slope.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
<u>Tree Stratum</u>				Number of Dominant Species
1. <u>Picea glauca (tree)</u>	<u>7</u>	<u>Yes</u>	<u>FACU</u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant Species Across All Strata: <u>6</u> (B)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83</u> (A/B)
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>7</u>				
50% of total cover: <u>3.5</u>		20% of total cover: <u>1.4</u>		
<u>Sapling/Shrub Stratum</u>				<u>Prevalence Index Worksheet:</u>
1. <u>Empetrum nigrum</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Vaccinium uliginosum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Ledum decumbens</u>	<u>25</u>	<u>No</u>	<u>FAC</u>	FACW species <u>3</u> x2= <u>6</u>
4. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>137</u> x3= <u>411</u>
5. <u>Picea glauca</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	FACU species <u>17</u> x4= <u>68</u>
6. <u>Vaccinium vitis-idaea</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>140</u>				Column Totals: <u>157</u> (A) <u>485</u> (B)
50% of total cover: <u>70</u>		20% of total cover: <u>28</u>		<u>Prevalence Index = B/A=</u> <u>3.09</u>
<u>Herb Stratum</u>				<u>Hydrophytic Vegetation Indicators:</u>
1. <u>Carex bigelowii</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Rubus chamaemorus</u>	<u>3</u>	<u>Yes</u>	<u>FACW</u>	Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	<u>2</u>	<u>Yes</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>10</u>				
50% of total cover: <u>5</u>		20% of total cover: <u>2</u>		
Plot size (radius, or length x width) <u>20 X 20 feet</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>15</u>		% Cover of Bryophytes <u>25</u>		
(Where applicable)				

Remarks: Close to meeting criteria for WSW vegetation community. Lichen 5%.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-8							N/A		hor:Oi
8-9							N/A		hor:Oe
9-12	10YR 4/3	90	N 4/0	10	D	PL	N/A	Silt Loam	hor:B1
12-22	10YR 4/4	100					N/A	Silty Clay Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input checked="" type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>Silty clay loam</u>	
Depth (inches):	<u>12</u>	
Field Drainage Class:	<u>SPD - Somewhat Poorly Drained</u>	

Remarks: Does not meet histic epipedon due to requirement of underlying layer of chroma 2 or less. Silty clay loam layer interpreted as a restrictive layer.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Upper 12 inches of soil likely saturated during the wet season. Over 50% of Picea glauca shrubs are stunted/stressed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7018\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Salix pulchra	2	No	FAC

Additional Reference Data: Photos

HDR7018\_19



Photo Name: Photo\_190627091406



Photo Name: Photo\_190627091149

## Additional Reference Data: Photos

HDR7018\_19



**Photo Name:** Photo\_190627091432



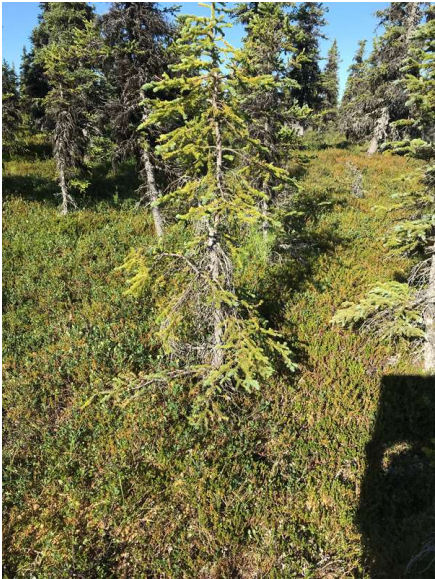
**Photo Name:** Photo\_190627091123



**Photo Name:** Photo\_190627091021



Photo Name: Photo\_190627091418



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/27/2019  
 Applicant/Owner: PLP Sampling Point: HDR7019\_19  
 Investigators: ZH AH Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): None Slope(%): 2 HGM: N/A  
 Subregion (LRR): X Lat: 59.880299 Long: -155.010666 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Alder Tall Shrub (CATS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover:	<u>    </u>			
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>    </u> Multiply by: OBL species <u>    </u> x1= <u>    </u> FACW species <u>5</u> x2= <u>10</u> FAC species <u>108</u> x3= <u>324</u> FACU species <u>45</u> x4= <u>180</u> UPL species <u>    </u> x5= <u>    </u> Column Totals: <u>158</u> (A) <u>514</u> (B)  Prevalence Index = B/A= <u>3.25</u>
<b>Sapling/Shrub Stratum</b>				
1. <u>Alnus sinuata</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Ribes glandulosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
3. <u>Salix richardsonii</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
4. <u>Viburnum edule</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
5. <u>Populus balsamifera</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover:	<u>89</u>			
50% of total cover:	<u>44.5</u>	20% of total cover:	<u>17.8</u>	
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.   <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>    </u>
1. <u>Gymnocarpium dryopteris</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Equisetum arvense</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Calamagrostis canadensis</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
4. <u>Dryopteris expansa</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
5. <u>Heracleum maximum</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
6. <u>Thalictrum sparsiflorum</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
7. <u>Streptopus amplexifolius</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
8. <u>Trientalis europaea</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover:	<u>69</u>			
50% of total cover:	<u>34.5</u>	20% of total cover:	<u>13.8</u>	
Plot size (radius, or length x width) <u>20 X 20 feet</u> % Bare Ground <u>20 leaf litter</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>0</u> (Where applicable)				

Remarks:  
 Large Pop. bal. and Pic. gla. tree located just outside of plot.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-3	10YR 3/2	100					N/A	Silt Loam	hor:A1
3-5	10YR 2/1	100					N/A	Silt Loam	hor:A2
5-6	10YR 3/2	100					N/A	Silt Loam	hor:A
6-9	7.5YR 2.5/2	100					N/A	Sand	hor:B/C 50% fine gravels.
9-21	7.5YR 3/2	100					N/A	Silt Loam	hor:B/C *6

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed. \*6: Small patches of organic staining, 25% medium and course gravel.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:									
Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/> X	Depth (inches):	<input type="text"/>			
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/> X	Depth (inches):	<input type="text"/>			
Saturation Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/> X	Depth (inches):	<input type="text"/>			
(includes capillary fringe)									
					Wetland Hydrology Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/> X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

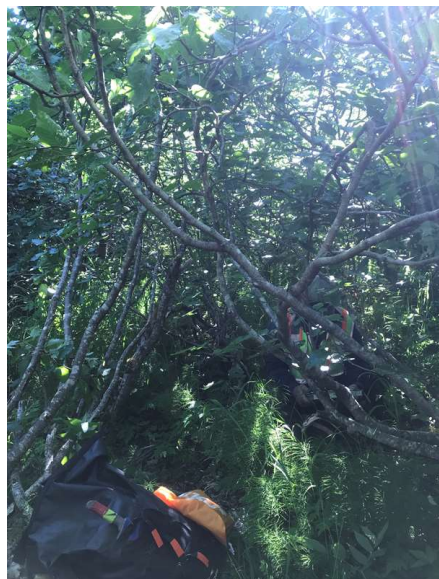
Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:



## Additional Reference Data: Photos

HDR7019\_19



**Photo Name:** Photo\_190627103548



**Photo Name:** Photo\_190627103614



**Photo Name:** Photo\_190627103530

## Additional Reference Data: Photos

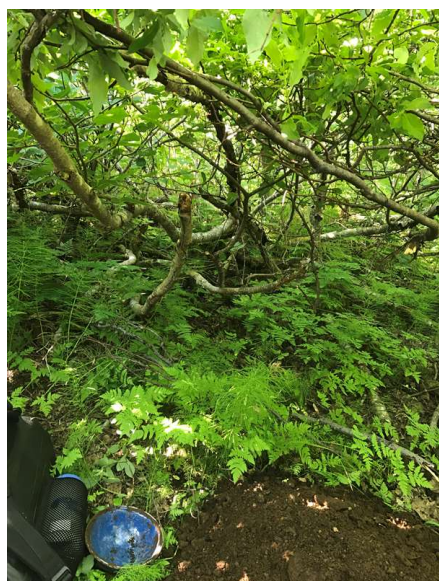
HDR7019\_19



**Photo Name:** Photo\_190627103539



**Photo Name:** Photo\_190627103515



**Photo Name:** Photo\_190627103601

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/27/2019  
 Applicant/Owner: PLP Sampling Point: HDR7020\_19  
 Investigators: ZH AH Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): None Slope(%): 7 HGM: Slope  
 Subregion (LRR): X Lat: 59.881863 Long: -155.013809 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS3/1B

Vegetation Type: Dwarf White Spruce Scrub (DWSS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>			
Remarks:					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Picea glauca (tree)</u>	7	Yes	FACU	Number of Dominant Species
2. <u>    </u>				That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>    </u>				Total Number of Dominant
4. <u>    </u>				Species Across All Strata: <u>5</u> (B)
Total Cover: <u>7</u>				Percent of Dominant Species
50% of total cover: <u>3.5</u>		20% of total cover: <u>1.4</u>		That Are OBL, FACW, or FAC: <u>80</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	40	Yes	FAC	<u>Total % Cover of:</u> <u>3</u> <u>Multiply by:</u> <u>3</u>
2. <u>Rhododendron tomentosum</u>	35	Yes	FAC	OBL species <u>3</u> x1= <u>3</u>
3. <u>Betula nana</u>	20	No	FAC	FACW species <u>    </u> x2= <u>    </u>
4. <u>Vaccinium uliginosum</u>	20	No	FAC	FAC species <u>145</u> x3= <u>435</u>
5. <u>Vaccinium vitis-idaea</u>	10	No	FAC	FACU species <u>20</u> x4= <u>80</u>
6. <u>Picea glauca</u>	10	No	FACU	UPL species <u>    </u> x5= <u>    </u>
Total Cover: <u>141</u>				Column Totals: <u>168</u> (A) <u>518</u> (B)
50% of total cover: <u>70.5</u>		20% of total cover: <u>28.2</u>		<i>Prevalence Index = B/A=</i> <u>3.08</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	15	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	5	Yes	FAC	<u>    </u> Prevalence Index is ≤3.0
3. <u>    </u>				<u>    </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>    </u>				data in Remarks or on a separate sheet)
5. <u>    </u>				<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>    </u>				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>    </u>				
8. <u>    </u>				
9. <u>    </u>				
10. <u>    </u>				
Total Cover: <u>20</u>				<b>Hydrophytic Vegetation Present?</b>
50% of total cover: <u>10</u>		20% of total cover: <u>4</u>		
Plot size (radius, or length x width) <u>20 X 20 feet</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>30</u>		% Cover of Bryophytes <u>30</u>		Yes <u>X</u> No <u>    </u>
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oi
3-5							N/A		hor:Oe
5-10	2.5Y 4/2	30	10Y 5/1	10	D	PL	N/A	Silty Clay Loam	hor:B1
5-10			5YR 4/6	50	C	PL M	N/A	Silty Clay Loam	hor:B1
5-10			7.5YR 4/6	10	C	PL	N/A	Silty Clay Loam	hor:B1
10-18	10YR 4/4	100					N/A	Silty Clay Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input checked="" type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type:    Silty clay loam	
Depth (inches):    5	
Field Drainage Class:    SPD - Somewhat Poorly Drained	

Remarks: Similar soil pit at plot 7018 but with strong redox. Soil profile likely saturated in upper 12 inches during the wet season and would also likely meet Alaska Redox with 2.5Y hue if primary hydro indicators present. Dry to slightly moist pit, too dry for alpha alpha test.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> FAC-Neutral Test (D5)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)				
<input type="checkbox"/> Algal Mat or Crust (B4)					
<input type="checkbox"/> Iron Deposits (B5)					
<input type="checkbox"/> Surface Soil Cracks (B6)					
<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):				
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):				
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):				
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary indicators observed. Picea glauca shrubs and trees stunted/stressed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Spiraea stevenii	3	No	FACU
Vaccinium oxycoccos	3	No	OBL

Additional Reference Data: Photos

HDR7020\_19



Photo Name: Photo\_190627121954



Photo Name: Photo\_190627121921

## Additional Reference Data: Photos

HDR7020\_19



**Photo Name:** Photo\_190627121911



**Photo Name:** Photo\_190627121931



**Photo Name:** Photo\_190627121944



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/27/2019</u>
Applicant/Owner: <u>PLP</u>		Sampling Point: <u>HDR7021_19</u>
Investigators: <u>ZH, AH</u>	Landform (hillslope, terrace, etc.): <u>Valleybottom</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>2</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.895958</u>	Long: <u>-154.954559</u>
	Datum: <u>WGS84</u>	
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS3B</u>	

Vegetation Type: Low Ericaceous Shrub Tundra (LEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>      </u>			
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>      </u> Multiply by: OBL species <u>      </u> x1= <u>      </u> FACW species <u>      </u> x2= <u>      </u> FAC species <u>187</u> x3= <u>561</u> FACU species <u>5</u> x4= <u>20</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>192</u> (A) <u>581</u> (B)  Prevalence Index = B/A= <u>3.03</u>
<b>Sapling/Shrub Stratum</b>				
1. <u>Empetrum nigrum</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Ledum decumbens</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	
4. <u>Vaccinium vitis-idaea</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	
5. <u>Betula nana</u>	<u>17</u>	<u>No</u>	<u>FAC</u>	
6. <u>Betula glandulosa</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
Total Cover:	<u>187</u>			
50% of total cover:	<u>93.5</u>	20% of total cover:	<u>37.4</u>	
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
1. <u>Carex bigelowii</u>	<u>3</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Equisetum sylvaticum</u>	<u>2</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>5</u>			
50% of total cover:	<u>2.5</u>	20% of total cover:	<u>1</u>	
Plot size (radius, or length x width) <u>20 X 40 feet</u> % Bare Ground <u>3</u>				
% Cover of Wetland Bryophytes <u>5</u> % Cover of Bryophytes <sup>7</sup> <u>      </u>				
(Where applicable)				

Remarks:

Majority of ericaceous shrubs over 8 inches in height. Pic. gla. (tree at 1%) moved to shrub stratum due to less than 5% overall cover in tree stratum.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oi
3-7	10YR 2/1	100					N/A	Silt Loam	hor:A
7-10	10YR 4/3	98	7.5YR 3/3	2	C	M	N/A	Silt Loam	hor:B1
10-20	5Y 4/2	80	7.5YR 4/6	20	C	PL M	N/A	Silt Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:

<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input checked="" type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b> Type: <u>None</u> Depth (inches): <u>N/A</u> Field Drainage Class: <u>SPD - Somewhat Poorly Drained</u>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> <b>X</b> No <input type="checkbox"/>
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Remarks: Profile very moist from 10 to 20 inches but not saturated.

HYDROLOGY

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one required; check all that apply)	<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input checked="" type="checkbox"/> Microtopographic Relief (D4)
	<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> <b>X</b> Depth (inches): _____ Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> <b>X</b> Depth (inches): _____ Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> <b>X</b> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> <b>X</b> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Strong hydric soils, upper 12 inches likely saturated under normal conditions or during wet season.

Geomorphic Position: Valley bottom

Additional Reference Data: Overflow Vegetation

HDR7021\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Picea glauca	3	No	FACU
Salix pulchra	2	No	FAC
Picea glauca (tree)	1	No	FACU
Spiraea stevenii	1	No	FACU

Additional Reference Data: Photos

HDR7021\_19



Photo Name: Photo\_190627140139



Photo Name: Photo\_190627140217





**Photo Name:** Photo\_190627140251



**Photo Name:** Photo\_190627140109

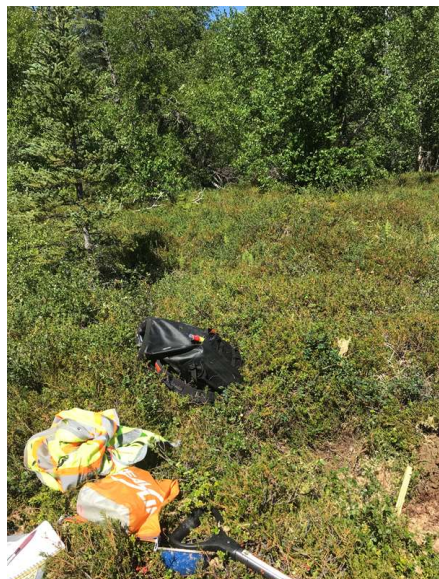


**Photo Name:** Photo\_190627140235

## Additional Reference Data: Photos

HDR7021\_19

Photo Name: Photo\_190627140159



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/27/2019</u>
Applicant/Owner: <u>PLP</u>		Sampling Point: <u>HDR7023_19</u>
Investigators: <u>ZH AH</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>2</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.896069</u>	Long: <u>-154.954346</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>U</u>	Datum: <u>WGS84</u>

Vegetation Type: Open Mixed Forest (OMF)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>      </u> No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks:	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Betula papyrifera s.l. (tree)</u>	15	Yes	FACU	Number of Dominant Species
2. <u>Picea glauca (tree)</u>	5	Yes	FACU	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>				Total Number of Dominant
4. <u>      </u>				Species Across All Strata: <u>6</u> (B)
Total Cover: <u>20</u>				Percent of Dominant Species
50% of total cover: <u>10</u>		20% of total cover: <u>4</u>		That Are OBL, FACW, or FAC: <u>50</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Rhododendron tomentosum</u>	50	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Betula papyrifera s.l.</u>	25	Yes	FACU	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium vitis-idaea</u>	15	No	FAC	FACW species <u>2</u> x2= <u>4</u>
4. <u>Betula glandulosa</u>	10	No	FAC	FAC species <u>103</u> x3= <u>309</u>
5. <u>Empetrum nigrum</u>	10	No	FAC	FACU species <u>55</u> x4= <u>220</u>
6. <u>Vaccinium uliginosum</u>	10	No	FAC	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>135</u>				Column Totals: <u>160</u> (A) <u>533</u> (B)
50% of total cover: <u>67.5</u>		20% of total cover: <u>27</u>		<i>Prevalence Index = B/A=</i> <u>3.33</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum sylvaticum</u>	3	Yes	FAC	Dominance Test is >50%
2. <u>Rubus chamaemorus</u>	2	Yes	FACW	Prevalence Index is ≤3.0
3. <u>      </u>				Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>				data in Remarks or on a separate sheet)
5. <u>      </u>				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>				
7. <u>      </u>				
8. <u>      </u>				
9. <u>      </u>				
10. <u>      </u>				
Total Cover: <u>5</u>				
50% of total cover: <u>2.5</u>		20% of total cover: <u>1</u>		
Plot size (radius, or length x width) <u>20 X 20 feet</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>20</u>		
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-6	7.5YR 2.5/2	100					N/A	Silt Loam	hor:A *2
6-7	2.5Y 6/1	100					N/A	Very Fine Sand	hor:C Ash
7-9	2.5YR 2.5/3	100					N/A	Sandy Loam	hor:B
9-12	7.5YR 3/4	100					N/A	Sandy Loam	hor:B1
12-20	10YR 3/4	100					N/A	Sandy Loam	hor:B2 *6

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type: None			Yes	No	X
Depth (inches): N/A					
Field Drainage Class: WD - Well Drained					

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed. \*2: Few bits of charcoal and organic staining. \*6: Some small patches of organic staining.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):	Yes	No	X
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):			
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):			
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7023\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Spiraea stevenii	10	No	FACU
Betula nana	5	No	FAC

Additional Reference Data: Photos

HDR7023\_19



Photo Name: Photo\_190627150426



Photo Name: Photo\_190627150413

## Additional Reference Data: Photos

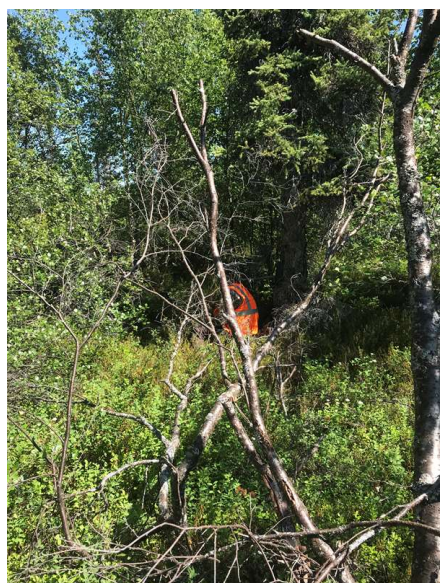
HDR7023\_19



**Photo Name:** Photo\_190627150348



**Photo Name:** Photo\_190627150401



**Photo Name:** Photo\_190627150440



## Additional Reference Data: Photos

HDR7023\_19

**Photo Name:** Photo\_190627150511



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/28/2019  
 Applicant/Owner: PLP Sampling Point: HDR7026\_19  
 Investigators: ZH AH Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): None Slope(%): 7 HGM: Slope  
 Subregion (LRR): X Lat: 59.896168 Long: -154.950974 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS3B

Vegetation Type: Low Ericaceous Shrub Tundra (LEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>      </u>			<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>      </u> Multiply by: OBL species <u>      </u> x1= <u>      </u> FACW species <u>1</u> x2= <u>2</u> FAC species <u>215</u> x3= <u>645</u> FACU species <u>8</u> x4= <u>32</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>224</u> (A) <u>679</u> (B)
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	
<b>Sapling/Shrub Stratum</b>				
1. <u>Empetrum nigrum</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
2. <u>Ledum decumbens</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Vaccinium uliginosum</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Betula nana</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	
5. <u>Vaccinium vitis-idaea</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	
6. <u>Picea glauca</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
Total Cover:	<u>218</u>			
50% of total cover:	<u>109</u>	20% of total cover:	<u>43.6</u>	
<b>Herb Stratum</b>				
1. <u>Carex bigelowii</u>	<u>2</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Equisetum sylvaticum</u>	<u>2</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Calamagrostis canadensis</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
4. <u>Rubus chamaemorus</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>6</u>			
50% of total cover:	<u>3</u>	20% of total cover:	<u>1.2</u>	
Plot size (radius, or length x width) <u>15 X 15 feet</u> % Bare Ground <u>0</u> % Cover of Wetland Bryophytes <u>70 sphagnum</u> % Cover of Bryophytes <u>75</u> (Where applicable)				

Remarks:  
 Lichen 2%. Pic. gla. (tree at 3%) moved to shrub stratum due to less than 5% cover in overall tree stratum.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-10							N/A		hor:Oi
10-12							N/A		hor:Oe
12-20	10YR 2/1	50					N/A	Sandy Loam	hor:A
12-20	7.5YR 2/2	50					N/A	Sandy Loam	hor:A

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>PD - Poorly Drained</u>	

Remarks: No saturation in pit but soil likely saturated in upper 12" of soil profile under normal conditions during the wet season due to presence of thick organic horizon and landscape position (toeslope).

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input checked="" type="checkbox"/> X Other (Explain in Remarks)	<input checked="" type="checkbox"/> X Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> X	No	
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
Water Table Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
Saturation Present? (includes capillary fringe)	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Likely saturated during normal conditions in wet season. Plot located at toeslope, evidence of groundwater surface discharge (iron staining) observed approximately 15 feet to the north in adjacent down-slope PSS1C wetland just outside of plot.  
  
Geomorphic Position: Toeslope



Additional Reference Data: Overflow Vegetation

HDR7026\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Picea glauca (tree)	3	No	FACU
Spiraea stevenii	2	No	FACU

Additional Reference Data: Photos

HDR7026\_19



Photo Name: Photo\_190627164026



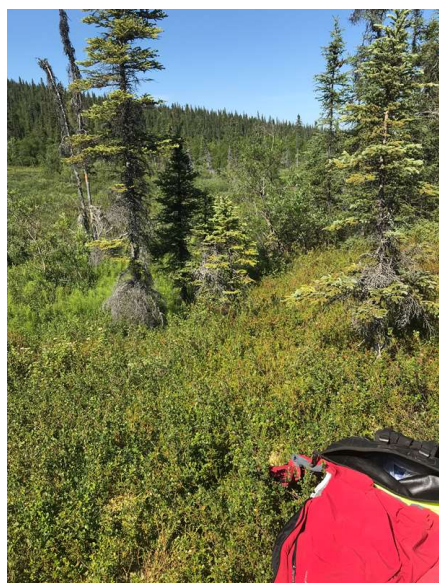
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## Additional Reference Data: Photos

HDR7026\_19



**Photo Name:** Photo\_190627163921



**Photo Name:** Photo\_190627164012



**Photo Name:** Photo\_190627164050

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/28/2019  
 Applicant/Owner: PLP Sampling Point: HDR7028\_19  
 Investigators: ZH AH Landform (hillslope, terrace, etc.): Valleybottom  
 Local Relief (concave, convex, none): None Slope(%): 2 HGM: Slope  
 Subregion (LRR): X Lat: 59.899151 Long: -154.943634 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PFO1/SS1B

Vegetation Type: Open Broadleaf Forest (OBF)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>			
Remarks:					

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				
1. <u>Betula papyrifera s.l.</u>	30	Yes	FACU	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60</u> (A/B)
2. <u>Picea glauca (tree)</u>	5	No	FACU	
3. <u>    </u>				
4. <u>    </u>				
Total Cover:	35			
50% of total cover:	17.5	20% of total cover:	7	
<b>Sapling/Shrub Stratum</b>				
1. <u>Alnus sinuata</u>	25	Yes	FAC	<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>    </u> Multiply by: OBL species <u>3</u> x1= <u>3</u> FACW species <u>14</u> x2= <u>28</u> FAC species <u>103</u> x3= <u>309</u> FACU species <u>54</u> x4= <u>216</u> UPL species <u>    </u> x5= <u>    </u> Column Totals: <u>174</u> (A) <u>556</u> (B)  Prevalence Index = B/A= <u>3.20</u>
2. <u>Spiraea stevenii</u>	10	Yes	FACU	
3. <u>Betula papyrifera s.l.</u>	5	No	FACU	
4. <u>Salix pulchra</u>	3	No	FAC	
5. <u>Salix richardsonii</u>	3	No	FACW	
6. <u>Picea glauca</u>	2	No	FACU	
Total Cover:	48			
50% of total cover:	24	20% of total cover:	9.6	
<b>Herb Stratum</b>				
1. <u>Equisetum arvense</u>	40	Yes	FAC	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Calamagrostis canadensis</u>	20	Yes	FAC	
3. <u>Equisetum sylvaticum</u>	10	No	FAC	
4. <u>Sanguisorba canadensis</u>	10	No	FACW	
5. <u>Rubus pedatus</u>	5	No	FAC	
6. <u>Potentilla palustris</u>	3	No	OBL	
7. <u>Trientalis europaea</u>	2	No	FACU	
8. <u>Rubus chamaemorus</u>	1	No	FACW	
9. <u>Viola sp.</u>	1	No	N/A	
10. <u>    </u>				
Total Cover:	92			
50% of total cover:	46	20% of total cover:	18.4	
Plot size (radius, or length x width) <u>20 X 20 feet</u> % Bare Ground <u>0</u> % Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>10</u> (Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-7									hor:Oe
7-11	10YR 3/3	75	7.5YR 3/4	25	C	PL M	Yes	Silt Loam	hor:B1
11-18	5Y 3/1	85	5YR 4/4	10	C	PL RC	Yes	Silt Loam	hor:B2
11-18			7.5YR 3/4	5	C	PL	Yes	Silt Loam	hor:B2
18-22	5Y 3/2	97	5YR 3/6	3	C	PL M	Yes	Sandy Loam	hor:B/C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.	
<input checked="" type="checkbox"/> Alaska Redox (A14)		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b>
Type: <u>None</u>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Depth (inches): <u>N/A</u>	
Field Drainage Class: <u>PD - Poorly Drained</u>	

Remarks: Close to meeting criteria for histic epipedon. Mineral layers moist enough for alpha alpha test, which was positive on all mineral layers.

HYDROLOGY

<b>Wetland Hydrology Indicators:</b>	<b>Secondary Indicators (2 or more required)</b>
Primary Indicators (minimum of one required; check all that apply)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u></u>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>22.0</u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>19.0</u>	
(includes capillary fringe)	

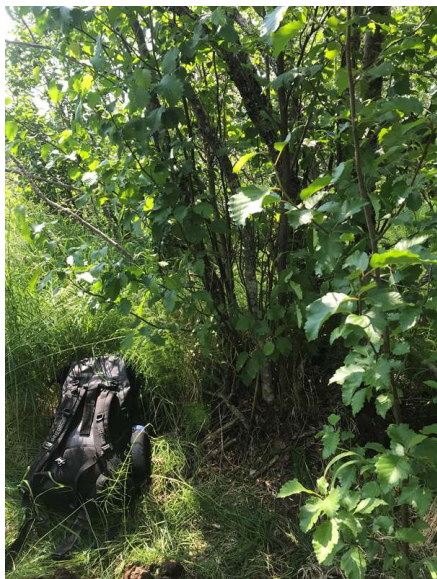
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Water slowly weeping in at 19". Bet. pap. has multiple trunks, appears spindly and stressed from wetness. Some standing dead.

Geomorphic Position: Valley bottom adjacent to stream. Mapped wetlands located adjacent to north and south of polygon.

## Additional Reference Data: Photos

HDR7028\_19



**Photo Name:** Photo\_190628135351



**Photo Name:** Photo\_190628135326



**Photo Name:** Photo\_190628135343



## Additional Reference Data: Photos

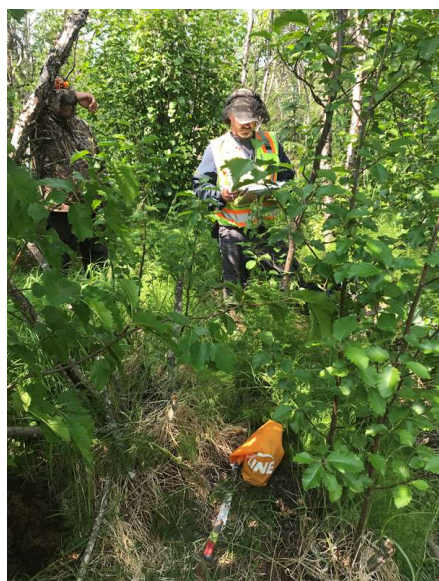
HDR7028\_19



**Photo Name:** Photo\_190628135230



**Photo Name:** Photo\_190628135312



**Photo Name:** Photo\_190628135400



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/28/2019  
 Applicant/Owner: PLP Sampling Point: HDR7031\_19  
 Investigators: ZH, AH Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): Concave Slope(%): 5 HGM: Slope  
 Subregion (LRR): X Lat: 59.898491 Long: -154.939148 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1/EM1B

Vegetation Type: Broadleaf Woodland (BW)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil X or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>			
Remarks:					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Betula papyrifera s.l. (tree)</u>	15	Yes	FACU	Number of Dominant Species
2. <u>Picea glauca (tree)</u>	3	No	FACU	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>    </u>				Total Number of Dominant
4. <u>    </u>				Species Across All Strata: <u>5</u> (B)
Total Cover: <u>18</u>				Percent of Dominant Species
50% of total cover: <u>9</u>		20% of total cover: <u>3.6</u>		That Are OBL, FACW, or FAC: <u>60</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Alnus tenuifolia</u>	20	Yes	FAC	<u>Total % Cover of:</u> <u>2</u> <u>Multiply by:</u> <u>2</u>
2. <u>Betula papyrifera s.l.</u>	20	Yes	FACU	OBL species <u>2</u> x1= <u>2</u>
3. <u>Salix pulchra</u>	15	Yes	FAC	FACW species <u>2</u> x2= <u>4</u>
4. <u>Vaccinium vitis-idaea</u>	3	No	FAC	FAC species <u>97</u> x3= <u>291</u>
5. <u>Picea glauca</u>	3	No	FACU	FACU species <u>47</u> x4= <u>188</u>
6. <u>Linnaea borealis</u>	3	No	UPL	UPL species <u>3</u> x5= <u>15</u>
Total Cover: <u>66</u>				Column Totals: <u>151</u> (A) <u>500</u> (B)
50% of total cover: <u>33</u>		20% of total cover: <u>13.2</u>		<u>Prevalence Index = B/A=</u> <u>3.31</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	45	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Equisetum sylvaticum</u>	5	No	FAC	Prevalence Index is ≤3.0
3. <u>Rubus arcticus s.l.</u>	5	No	FAC	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Cornus suecica</u>	3	No	FAC	data in Remarks or on a separate sheet)
5. <u>Gymnocarpium dryopteris</u>	3	No	FACU	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Viola sp.</u>	3	No	N/A	
7. <u>Sanguisorba canadensis</u>	2	No	FACW	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Potentilla palustris</u>	2	No	OBL	must be present, unless disturbed or problematic.
9. <u>Calamagrostis canadensis</u>	1	No	FAC	
10. <u>Trientalis europaea</u>	1	No	FACU	
Total Cover: <u>70</u>				
50% of total cover: <u>35</u>		20% of total cover: <u>14</u>		
Plot size (radius, or length x width) <u>20 X 20 feet</u>		% Bare Ground <u>20</u>		<b>Hydrophytic</b>
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>20</u>		<b>Vegetation</b>
(Where applicable)				Yes <u>X</u> No <u>    </u>
Remarks:				
Lichen 1%.				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oi
3-6							N/A		hor:Oe
6-13	5YR 2.5/1	90	5YR 3/4	10	C	PL RC	Yes	Silt Loam	hor:A1
13-22	7.5YR 3/1	100					Yes	Silt Loam	hor:A2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

<b>Hydric Soil Indicators:</b>			<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input checked="" type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>PD - Poorly Drained</u>	

Remarks: Soil profile moist enough for alpha-alpha test which was positive on all mineral layers. No primary hydrology indicators observed however several secondary hydrology indicators were observed along with a concave setting in the landscape which suggests this site is saturated within the upper 12" of the soil profile during the wet season.

HYDROLOGY

<b>Wetland Hydrology Indicators:</b>			<i>Secondary Indicators (2 or more required)</i>		
Primary Indicators (minimum of one required; check all that apply)			<input checked="" type="checkbox"/>	Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/>	Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/>	Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/>	Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/>	Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/>	Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)			<input checked="" type="checkbox"/>	Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/>	FAC-Neutral Test (D5)	

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Very moist throughout soil profile but not saturated. Water stained leaves observed in micro-lows.  
  
Geomorphic Position: Concave area positioned at toeslope.

Additional Reference Data: Overflow Vegetation

HDR7031\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Spiraea stevenii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>

Additional Reference Data: Photos

HDR7031\_19



Photo Name: Photo\_190628161403



Photo Name: Photo\_190628161324



## Additional Reference Data: Photos

HDR7031\_19



**Photo Name:** Photo\_190628161335



**Photo Name:** Photo\_190628161347



**Photo Name:** Photo\_190628161355

## Additional Reference Data: Photos

HDR7031\_19

Photo Name: Photo\_190628161315



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/29/2019  
 Applicant/Owner: PLP Sampling Point: HDR7033\_19  
 Investigators: ZH, AH Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): None Slope(%): 1 HGM: N/A  
 Subregion (LRR): X Lat: 59.891144 Long: -154.913437 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	60	Yes	FAC	<u>Total % Cover of:</u> <u>    </u> <u>Multiply by:</u> <u>    </u>
2. <u>Rhododendron tomentosum</u>	45	Yes	FAC	OBL species <u>    </u> x1= <u>    </u>
3. <u>Vaccinium uliginosum</u>	30	No	FAC	FACW species <u>    </u> x2= <u>    </u>
4. <u>Betula nana</u>	15	No	FAC	FAC species <u>170</u> x3= <u>510</u>
5. <u>Vaccinium vitis-idaea</u>	15	No	FAC	FACU species <u>    </u> x4= <u>    </u>
6. <u>Salix pulchra</u>	5	No	FAC	UPL species <u>    </u> x5= <u>    </u>
Total Cover: <u>170</u>				Column Totals: <u>170</u> (A) <u>510</u> (B)
50% of total cover: <u>85</u>				<u>Prevalence Index = B/A =</u> <u>3.00</u>
20% of total cover: <u>34</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>X</u> Dominance Test is >50%
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	data in Remarks or on a separate sheet)
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
7. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	must be present, unless disturbed or problematic.
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover: <u>    </u>				
50% of total cover: <u>0</u>				
20% of total cover: <u>0</u>				
Plot size (radius, or length x width) <u>5 X 5 feet</u>				<b>Hydrophytic</b>
% Bare Ground <u>5</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>    </u>
% Cover of Bryophytes <sup>3</sup> <u>    </u>				<b>Present?</b>
(Where applicable)				

Remarks:  
 Lichen 5%. Square plot. Small microsite plot to capture micro-high of large, wide hummock features. Plot is on a micro-high.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oi
3-5							N/A		hor:Oe
5-11	7.5YR 2.5/2	100					N/A	Sandy Loam	hor:A/B
11-21	7.5YR 3/3	100					N/A	Sandy Loam	hor:B1
21-25	10YR 4/2	100					N/A	Sandy Loam	hor:B/C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: MWD - Moderately Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Soil profile dry throughout, too dry for alpha alpha test.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed. Completed second plot (HDR\_7034\_19) in adjacent micro-low.

Geomorphic Position:

## Additional Reference Data: Photos

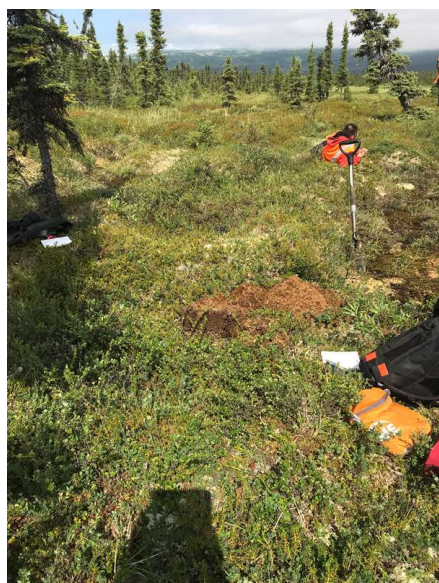
HDR7033\_19



**Photo Name:** Photo\_190629121240



**Photo Name:** Photo\_190629121254



**Photo Name:** Photo\_190629121303

## Additional Reference Data: Photos

HDR7033\_19



**Photo Name:** Photo\_190629121220



**Photo Name:** Photo\_190629121202



**Photo Name:** Photo\_190629121154



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/29/2019  
 Applicant/Owner: PLP Sampling Point: HDR7034\_19  
 Investigators: ZH, AH Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): None Slope(%): 0 HGM: N/A  
 Subregion (LRR): X Lat: 59.891182 Long: -154.913422 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Salix fuscescens</u>	<u>7</u>	<u>Yes</u>	<u>FACW</u>	<u>Total % Cover of:</u> <u>    </u> <u>Multiply by:</u> <u>    </u>
2. <u>Andromeda polifolia</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>	OBL species <u>    </u> x1= <u>    </u>
3. <u>Betula nana</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FACW species <u>14</u> x2= <u>28</u>
4. <u>Vaccinium uliginosum</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FAC species <u>6</u> x3= <u>18</u>
5. <u>Carex saxatilis</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	FACU species <u>    </u> x4= <u>    </u>
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	UPL species <u>    </u> x5= <u>    </u>
Total Cover: <u>20</u>				Column Totals: <u>20</u> (A) <u>46</u> (B)
50% of total cover: <u>10</u>				<u>Prevalence Index = B/A=</u> <u>2.30</u>
20% of total cover: <u>4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>X</u> Dominance Test is >50%
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	data in Remarks or on a separate sheet)
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
7. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	must be present, unless disturbed or problematic.
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover: <u>    </u>				<b>Hydrophytic Vegetation Present?</b>  Yes <u>X</u> No <u>    </u>
50% of total cover: <u>0</u>				
20% of total cover: <u>0</u>				
Plot size (radius, or length x width) <u>5 X 5 feet</u> % Bare Ground <u>5</u>				
% Cover of Wetland Bryophytes <u>10</u>		% Cover of Bryophytes <u>90</u>		
(Where applicable)				

Remarks:  
 Square plot. 5x5 ft microsite plot due to large, wide hummocks interspersed with wide (approx 2-5 ft wide) micro-lows. Plot is in a micro-low. Dark color on aerial imagery could be attributed to prevalence of dark colored bryophytes. Car. sax. (herb) moved to shrub stratum due to less than 5% cover in overall herb stratum.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-6	7.5YR 3/2	100					N/A	Sandy Loam	hor:A/B
6-13	7.5YR 3/3	100					N/A	Sandy Loam	hor:B1
13-19	7.5YR 3/3	50					N/A	Sandy Loam	hor:B2
13-19	10YR 3/2	50					N/A	Sandy Loam	hor:B2
19-24	2.5Y 4/2	100					No	Sandy Loam	hor:B/C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	No	X
Depth (inches):	N/A				
Field Drainage Class:	MWD - Moderately Well Drained				

Remarks: Soil profile too dry for alpha alpha test except at lowest horizon which was moist enough however the test was negative. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	No	X	Yes	No
Water Table Present?	Yes	No	X		
Saturation Present?	Yes	No	X		
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Moist in lowest portion of soil pit but not saturated. No primary indicators observed however two secondary indicators were observed.

Geomorphic Position:

## Additional Reference Data: Photos

HDR7034\_19



**Photo Name:** Photo\_190629121545



**Photo Name:** Photo\_190629121531



**Photo Name:** Photo\_190629121402



## Additional Reference Data: Photos

HDR7034\_19



**Photo Name:** Photo\_190629121522



**Photo Name:** Photo\_190629121458



**Photo Name:** Photo\_190629121604

Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	6/29/2019
Applicant/Owner:	PLP			Sampling Point:	HDR7035_19
Investigators:	ZH AH	Landform (hillslope, terrace, etc.):	Toeslope		
Local Relief (concave, convex, none):	None	Slope(%):	3	HGM:	N/A
Subregion (LRR):	X	Lat:	59.890404	Long:	-154.912491
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Remarks:
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Remarks:
Car. big. (herb at 2%) and Equ. arv. (herb at 1%) moved to shrub stratum due to less than 5% cover in overall herb stratum.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-5									hor:Oe
5-6	2.5Y 4/2	100					N/A	Silt Loam	hor:A *3
6-11	5YR 2.5/2	100					N/A	Sandy Loam	hor:A1
11-12	2.5Y 4/2	100					N/A	Silt Loam	hor:A2 *5
12-18	10YR 3/3	100					N/A	Sandy Loam	hor:B1
18-24	10YR 4/4	100					N/A	Sandy Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	No	X
Depth (inches):	N/A				
Field Drainage Class:	WD - Well Drained				

Remarks: Soil profile dry throughout, too dry for alpha alpha test. \*3: Possible ash layer from old fire. 25% charcoal bits. \*5: Possible ash with 25% charcoal.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	No	X	Depth (inches):	
Water Table Present?	Yes	No	X	Depth (inches):	
Saturation Present?	Yes	No	X	Depth (inches):	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR7035\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Vaccinium vitis-idaea	7	No	FAC
Spiraea stevenii	5	No	FACU
Carex bigelowii	2	No	FAC
Equisetum arvense	1	No	FAC
Salix pulchra	1	No	FAC

Additional Reference Data: Photos

HDR7035\_19



Photo Name: Photo\_190629131941



Photo Name: Photo\_190629132012

## Additional Reference Data: Photos

HDR7035\_19



**Photo Name:** Photo\_190629132101



**Photo Name:** Photo\_190629132039



**Photo Name:** Photo\_190629132052

## Additional Reference Data: Photos

HDR7035\_19

**Photo Name:** Photo\_190629132116





Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	6/29/2019
Applicant/Owner:	PLP			Sampling Point:	HDR7036_19
Investigators:	ZH, AH	Landform (hillslope, terrace, etc.):	Footslope		
Local Relief (concave, convex, none):	Concave	Slope(%):	3	HGM:	Slope
Subregion (LRR):	X	Lat:	59.880917	Long:	-154.904266
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	PSS3B		

Remarks:
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Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:			
1.					Number of Dominant Species			
2.					That Are OBL, FACW, or FAC: 3 (A)			
3.					Total Number of Dominant			
4.					Species Across All Strata: 3 (B)			
Total Cover: _____					Percent of Dominant Species			
50% of total cover: 0					That Are OBL, FACW, or FAC: 100 (A/B)			
20% of total cover: 0								
Sapling/Shrub Stratum					Prevalence Index Worksheet:			
1.	Rhododendron tomentosum	50	Yes	FAC	Total % Cover of:		Multiply by:	
2.	Vaccinium uliginosum	25	Yes	FAC	OBL species	3	x1=	3
3.	Betula nana	20	No	FAC	FACW species	33	x2=	66
4.	Empetrum nigrum	10	No	FAC	FAC species	115	x3=	345
5.	Vaccinium vitis-idaea	10	No	FAC	FACU species	7	x4=	28
6.	Andromeda polifolia	10	No	FACW	UPL species		x5=	
Total Cover: 132					Column Totals:	158	(A)	442 (B)
50% of total cover: 66					Prevalence Index = B/A= 2.80			
20% of total cover: 26.4								
Herb Stratum					Hydrophytic Vegetation Indicators:			
1.	Rubus chamaemorus	20	Yes	FACW	X	Dominance Test is >50%		
2.	Eriophorum russeolum s.l.	3	No	FACW	X	Prevalence Index is ≤3.0		
3.	Drosera rotundifolia	2	No	OBL	Morphological Adaptations <sup>1</sup> (Provide			
4.	Carex limosa	1	No	OBL	data in Remarks or on a separate sheet)			
5.					Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)			
6.								
7.								
8.								
9.								
10.								
Total Cover: 26					<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
50% of total cover: 13								
20% of total cover: 5.2								
Plot size (radius, or length x width) 20 X 20 feet					Hydrophytic Vegetation Present? Yes X No			
% Cover of Wetland Bryophytes 70 (Where applicable)					% Cover of Bryophytes 80			

Remarks:
15 % lichen.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5									hor:Oi
5-10									hor:Oe
10-20	7.5YR 2/2	100					Yes	Fine Sandy Loam	hor:A

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	SPD - Somewhat Poorly Drained				

Remarks: Positive alpha alpha starting at 10".

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	12.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	10.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Saturation observed at 10", water very slow to weep starting at 12" (interpreted as water table).

Geomorphic Position: Toeslope adjacent to pond fringe, slightly higher in elevation.

Additional Reference Data: Overflow Vegetation

HDR7036\_19

	Absolute	Dominant	Indicator
	% Cover	Species?	Status
Sapling/Shrub			
Picea glauca	7	No	FACU

Additional Reference Data: Photos

HDR7036\_19



Photo Name: Photo\_190629142030



Photo Name: Photo\_190629142055



## Additional Reference Data: Photos

HDR7036\_19



**Photo Name:** Photo\_190629142109



**Photo Name:** Photo\_190629142010



**Photo Name:** Photo\_190629141953

## Additional Reference Data: Photos

HDR7036\_19

**Photo Name:** Photo\_190629142041



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/29/2019  
 Applicant/Owner: PLP Sampling Point: HDR7037\_19  
 Investigators: ZH AH Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): Concave Slope(%): 2 HGM: Slope  
 Subregion (LRR): X Lat: 59.881023 Long: -154.903961 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS3/1B

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil X or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>	

Remarks:

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Rhododendron tomentosum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>4</u> <u>Multiply by:</u> <u>4</u>
2. <u>Vaccinium uliginosum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>4</u> x1= <u>4</u>
3. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>12</u> x2= <u>24</u>
4. <u>Vaccinium vitis-idaea</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>67</u> x3= <u>201</u>
5. <u>Salix fuscescens</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	FACU species <u>    </u> x4= <u>    </u>
6. <u>Betula glandulosa</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	UPL species <u>    </u> x5= <u>    </u>
Total Cover: <u>74</u>				Column Totals: <u>83</u> (A) <u>229</u> (B)
50% of total cover: <u>37</u>				<u>Prevalence Index = B/A=</u> <u>2.76</u>
20% of total cover: <u>14.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Rubus chamaemorus</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex limosa</u>	<u>2</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Eriophorum angustifolium</u>	<u>2</u>	<u>Yes</u>	<u>OBL</u>	<u>    </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u> data in Remarks or on a separate sheet)
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
7. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	must be present, unless disturbed or problematic.
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover: <u>9</u>				
50% of total cover: <u>4.5</u>				
20% of total cover: <u>1.8</u>				
Plot size (radius, or length x width) <u>10 X 10 feet</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>30</u>				Yes <u>X</u> No <u>    </u>
% Cover of Bryophytes <u>40</u>				<b>Present?</b>
(Where applicable)				

Remarks:



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-7									hor:Oe
7-17	10YR 2/1	30					No	Sandy Loam	hor:A/B *3
7-17	10YR 3/3	70					No	Sandy Loam	hor:A/B *4
17-21	5Y 4/2	100					Yes	Sandy Loam	hor:B/C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

<b>Hydric Soil Indicators:</b>			<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>SPD - Somewhat Poorly Drained</u>	

Remarks: Positive alpha alpha within 12 inches of first mineral horizon.    \*3: Inclusion of 2.5Y 3/3. Cryoturbated.    \*4: Inclusion of 2.5Y 3/3. Cryoturbated.

HYDROLOGY

<b>Wetland Hydrology Indicators:</b>			<i>Secondary Indicators (2 or more required)</i>		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input checked="" type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position: Toeslope, adjacent to pond fringe.

Additional Reference Data: Overflow Vegetation

HDR7037\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Picea mariana	2	No	FACW

Additional Reference Data: Photos

HDR7037\_19



Photo Name: Photo\_190629150852



Photo Name: Photo\_190629150701

## Additional Reference Data: Photos

HDR7037\_19

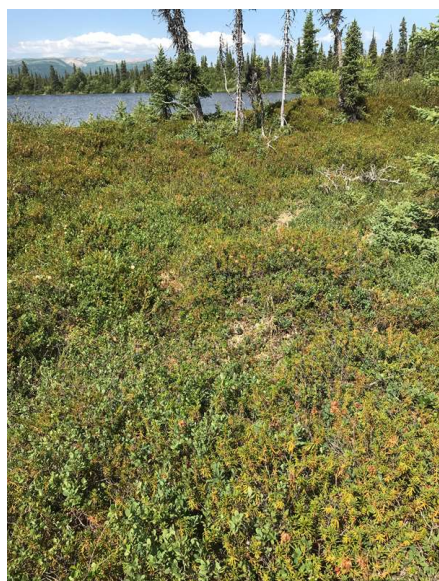
**Photo Name:** Photo\_190629150939



**Photo Name:** Photo\_190629150933



**Photo Name:** Photo\_190629150907





## Additional Reference Data: Photos

HDR7037\_19



**Photo Name:** Photo\_190629150915

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/29/2019  
 Applicant/Owner: PLP Sampling Point: HDR7038\_19  
 Investigators: ZH, AH Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): None Slope(%): 1 HGM: N/A  
 Subregion (LRR): X Lat: 59.884521 Long: -154.909988 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Black Spruce Woodland (BSW)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Picea mariana (tree)</u>	10	Yes	FACW	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)
2. <u>    </u>				Total Number of Dominant Species Across All Strata: <u>5</u> (B)
3. <u>    </u>				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. <u>    </u>				
Total Cover: <u>10</u>				
50% of total cover: <u>5</u>		20% of total cover: <u>2</u>		
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Rhododendron tomentosum</u>	50	Yes	FAC	<u>Total % Cover of:</u> <u>    </u> <u>Multiply by:</u> <u>    </u>
2. <u>Vaccinium uliginosum</u>	40	Yes	FAC	OBL species <u>    </u> x1= <u>    </u>
3. <u>Picea mariana</u>	20	No	FACW	FACW species <u>33</u> x2= <u>66</u>
4. <u>Salix pulchra</u>	15	No	FAC	FAC species <u>147</u> x3= <u>441</u>
5. <u>Vaccinium vitis-idaea</u>	10	No	FAC	FACU species <u>7</u> x4= <u>28</u>
6. <u>Spiraea stevenii</u>	7	No	FACU	UPL species <u>    </u> x5= <u>    </u>
Total Cover: <u>150</u>				Column Totals: <u>187</u> (A) <u>535</u> (B)
50% of total cover: <u>75</u>		20% of total cover: <u>30</u>		<u>Prevalence Index = B/A =</u> <u>2.86</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum sylvaticum</u>	15	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Carex bigelowii</u>	7	Yes	FAC	<u>X</u> Prevalence Index is ≤3.0
3. <u>Rubus chamaemorus</u>	3	No	FACW	<u>    </u> Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)
4. <u>Calamagrostis canadensis</u>	2	No	FAC	<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>    </u>				
6. <u>    </u>				
7. <u>    </u>				
8. <u>    </u>				
9. <u>    </u>				
10. <u>    </u>				
Total Cover: <u>27</u>				
50% of total cover: <u>13.5</u>		20% of total cover: <u>5.4</u>		
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>1</u>				
% Cover of Wetland Bryophytes <u>40</u> % Cover of Bryophytes <u>80</u>				
(Where applicable)				
Remarks:				
Lichen 1%				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A		hor:Oi
4-6							N/A		hor:Oe
6-7	10YR 2/2	100					N/A	Silt Loam	hor:A
7-11	10YR 4/2	100					N/A	Sandy Loam	hor:E Weak/ developing E horizon
11-18	7.5YR 2.5/2	70					N/A	Sandy Loam	hor:B1
11-18	10YR 4/2	30					N/A	Sandy Loam	hor:B1
18-24	7.5YR 2/2	100					N/A	Sandy Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No <u>  X  </u>

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:					
Surface Water Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/> X <input type="checkbox"/>	Depth (inches):		
Water Table Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/> X <input type="checkbox"/>	Depth (inches):		
Saturation Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/> X <input type="checkbox"/>	Depth (inches):		
(includes capillary fringe)			Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/> X <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary hydrology indicators observed.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR7038\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Betula nana	5	No	FAC
Empetrum nigrum	3	No	FAC

Additional Reference Data: Photos

HDR7038\_19



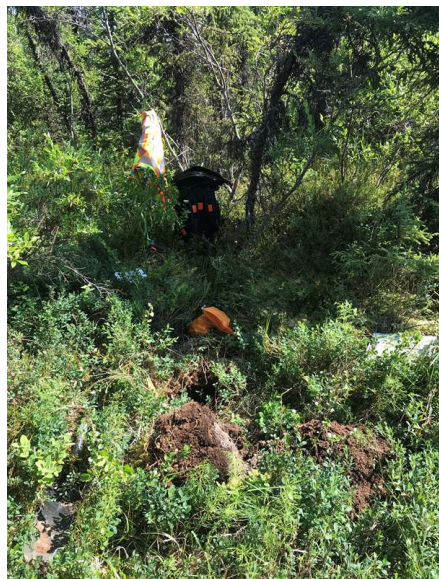
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Photo Name: Photo\_190629161907

## Additional Reference Data: Photos

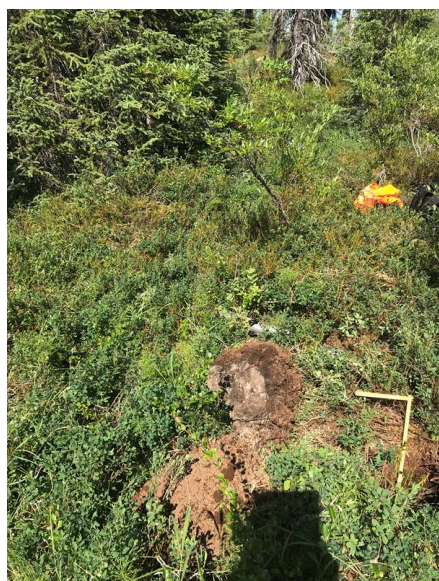
HDR7038\_19



**Photo Name:** Photo\_190629161944



**Photo Name:** Photo\_190629162008



**Photo Name:** Photo\_190629161931

Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	6/30/2019
Applicant/Owner:	PLP			Sampling Point:	HDR7040_19
Investigators:	ZH AH	Landform (hillslope, terrace, etc.):	Toeslope		
Local Relief (concave, convex, none):	None	Slope(%):	4	HGM:	N/A
Subregion (LRR):	X	Lat:	59.875046	Long:	-154.883728
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U_PUBH		

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If No, explain in Remarks)

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>      </u> X
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks:					

Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:			
1.	Picea glauca (tree)	5	Yes	FACU	Number of Dominant Species			
2.					That Are OBL, FACW, or FAC: 5 (A)			
3.					Total Number of Dominant			
4.					Species Across All Strata: 6 (B)			
Total Cover:		5			Percent of Dominant Species			
50% of total cover:		2.5	20% of total cover:		1	That Are OBL, FACW, or FAC: 83 (A/B)		
Sapling/Shrub Stratum					Prevalence Index Worksheet:			
1.	Myrica gale	35	Yes	OBL	Total % Cover of: Multiply by:			
2.	Empetrum nigrum	25	Yes	FAC	OBL species	35	x1=	35
3.	Rhododendron tomentosum	15	Yes	FAC	FACW species	5	x2=	10
4.	Vaccinium uliginosum	10	No	FAC	FAC species	90	x3=	270
5.	Vaccinium vitis-idaea	10	No	FAC	FACU species	10	x4=	40
6.	Betula glandulosa	5	No	FAC	UPL species		x5=	
Total Cover:		123			Column Totals:	140	(A)	355 (B)
50% of total cover:		61.5	20% of total cover:		24.6	Prevalence Index = B/A= 2.54		
Herb Stratum					Hydrophytic Vegetation Indicators:			
1.	Carex bigelowii	7	Yes	FAC	X	Dominance Test is >50%		
2.	Equisetum arvense	3	Yes	FAC	X	Prevalence Index is ≤3.0		
3.	Calamagrostis canadensis	1	No	FAC	Morphological Adaptations <sup>1</sup> (Provide			
4.	Rumex arcticus	1	No	FAC	data in Remarks or on a separate sheet)			
5.					Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)			
6.								
7.								
8.								
9.								
10.								
Total Cover:		12						
50% of total cover:		6	20% of total cover:		2.4			
Plot size (radius, or length x width)		15 X 15 feet	% Bare Ground		7			
% Cover of Wetland Bryophytes		10	% Cover of Bryophytes		40			
(Where applicable)								
					Hydrophytic Vegetation Present? Yes X No			

Remarks:
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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-4							N/A		hor:Oe
4-6	10YR 3/2	100					N/A	Sandy Loam	hor:A 25% gravels
6-19	10YR 3/2	100					No	Sand	hor:B/C *4

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	No	X
Depth (inches):	N/A				
Field Drainage Class:	SPD - Somewhat Poorly Drained				

Remarks: No hydric soil indicators observed. Soil pit on micro-high within hummocky plot. Second soil pit dug adjacent on a moderately low, micro-low within plot. Similar soil profile, but less organic development. \*4: Medium and coarse sand. 10% cobble and 40% gravel

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> X	<input type="checkbox"/> Dry Season Water Table (C2)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	X No	Depth (inches):	19.0	
Saturation Present?	Yes	X No	Depth (inches):	18.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Soil pit dug on micro-high within hummocky plot. Second soil pit dug adjacent in micro-low; similar soil profile but water table at 6 inches and saturation at 4 inches. Polygon is a mosaic of upland and small ponds (29%) captured by Plot HDR\_7041\_19. Percent composition of small ponds determined according to Chapter 5 of USACE Alaska Region Supplement.

Geomorphic Position: Toeslope

Additional Reference Data: Overflow Vegetation

HDR7040\_19

Sapling/Shrub	Absolute % Cover	Dominant Species?	Indicator Status
Salix alaxensis	5	No	FAC
Salix pulchra	5	No	FAC
Picea glauca	5	No	FACU
Andromeda polifolia	5	No	FACW
Potentilla fruticosa	3	No	FAC

Additional Reference Data: Photos

HDR7040\_19



Photo Name: Photo\_190630085809



Photo Name: Photo\_190630085948

## Additional Reference Data: Photos

HDR7040\_19



**Photo Name:** Photo\_190630085706



**Photo Name:** Photo\_190630085937



**Photo Name:** Photo\_190630085826



## Additional Reference Data: Photos

HDR7040\_19



**Photo Name:** Photo\_190630085648



**Photo Name:** Photo\_190630090001



**Photo Name:** Photo\_190630085924

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/30/2019  
 Applicant/Owner: PLP Sampling Point: HDR7045\_19  
 Investigators: ZH, AH Landform (hillslope, terrace, etc.): Bench  
 Local Relief (concave, convex, none): Concave Slope(%): 5 HGM: Slope  
 Subregion (LRR): X Lat: 59.809811 Long: -154.717880 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS3/EM1B

Vegetation Type: Ericaceous Shrub Bog (ESB)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>			
Remarks:					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>86</u> (A/B)
1. <u>Picea glauca (tree)</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>    </u>				
3. <u>    </u>				
4. <u>    </u>				
Total Cover: <u>5</u>				
50% of total cover: <u>2.5</u>		20% of total cover: <u>1</u>		
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b> <u>Total % Cover of:</u> <u>    </u> <u>Multiply by:</u> <u>    </u> OBL species <u>6</u> x1= <u>6</u> FACW species <u>28</u> x2= <u>56</u> FAC species <u>114</u> x3= <u>342</u> FACU species <u>12</u> x4= <u>48</u> UPL species <u>    </u> x5= <u>    </u> Column Totals: <u>160</u> (A) <u>452</u> (B)  <i>Prevalence Index = B/A=</i> <u>2.83</u>
1. <u>Empetrum nigrum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Rhododendron tomentosum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Vaccinium uliginosum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Salix pulchra</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	
5. <u>Vaccinium vitis-idaea</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	
6. <u>Picea glauca</u>	<u>7</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>84</u>				
50% of total cover: <u>42</u>		20% of total cover: <u>16.8</u>		
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% X Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
1. <u>Carex bigelowii</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Rubus chamaemorus</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Equisetum arvense</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Calamagrostis canadensis</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
5. <u>Pedicularis parviflora</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
6. <u>Drosera rotundifolia</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	
7. <u>Sanguisorba canadensis</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
8. <u>Equisetum fluviatile</u>	<u>1</u>	<u>No</u>	<u>OBL</u>	
9. <u>    </u>				
10. <u>    </u>				
Total Cover: <u>66</u>				
50% of total cover: <u>33</u>		20% of total cover: <u>13.2</u>		
Plot size (radius, or length x width) <u>15 X 15 feet</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>50</u>		% Cover of Bryophytes <u>50</u>		
(Where applicable)				<b>Hydrophytic Vegetation Present?</b>
Remarks:				Yes <u>X</u> No <u>    </u>

Shallow inundation at 3%.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-7							N/A		hor:Oi
7-24							N/A		hor:Oe *2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>VPD - Very Poorly Drained</u>	

Remarks: H2S at 15". \*2: Cobbles/gravels starting at 24".

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/>	No	
Surface Water Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):				
Water Table Present?	Yes	<input checked="" type="checkbox"/> No	Depth (inches):				
Saturation Present? (includes capillary fringe)	Yes	<input checked="" type="checkbox"/> No	Depth (inches):				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Water seeping into pit 11 inches interpreted as water table. Surface water present in micro-lows within plot. Pic. gla. shrubs/trees = stunted or stressed.
Geomorphic Position: Bench



Additional Reference Data: Overflow Vegetation

HDR7045\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Betula nana	5	No	FAC
Andromeda polifolia	3	No	FACW
Vaccinium oxycoccos	3	No	OBL
Salix richardsonii	2	No	FACW

Additional Reference Data: Photos

HDR7045\_19



Photo Name: Photo\_190630135842



Photo Name: Photo\_190630135729

## Additional Reference Data: Photos

HDR7045\_19

**Photo Name:** Photo\_190630135758



**Photo Name:** Photo\_190630135628



**Photo Name:** Photo\_190630135819





Photo Name: Photo\_190630135556





# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/30/2019  
 Applicant/Owner: PLP Sampling Point: HDR7047\_19  
 Investigators: ZH AH Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): None Slope(%): 5 HGM: N/A  
 Subregion (LRR): X Lat: 59.809669 Long: -154.716858 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Broadleaf Forest (OBF)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>    </u>	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Betula papyrifera s.l. (tree)</u>	45	Yes	FACU	Number of Dominant Species
2. <u>Populus balsamifera (tree)</u>	10	No	FACU	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>    </u>				Total Number of Dominant
4. <u>    </u>				Species Across All Strata: <u>4</u> (B)
Total Cover: <u>55</u>				Percent of Dominant Species
50% of total cover: <u>27.5</u>			20% of total cover: <u>11</u>	That Are OBL, FACW, or FAC: <u>50</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Alnus sinuata</u>	20	Yes	FAC	<u>Total % Cover of:</u> <u>    </u> <u>Multiply by:</u> <u>    </u>
2. <u>Ribes triste</u>	7	Yes	FAC	OBL species <u>    </u> x1= <u>    </u>
3. <u>Betula papyrifera s.l.</u>	2	No	FACU	FACW species <u>    </u> x2= <u>    </u>
4. <u>    </u>				FAC species <u>54</u> x3= <u>162</u>
5. <u>    </u>				FACU species <u>121</u> x4= <u>484</u>
6. <u>    </u>				UPL species <u>    </u> x5= <u>    </u>
Total Cover: <u>29</u>				Column Totals: <u>175</u> (A) <u>646</u> (B)
50% of total cover: <u>14.5</u>			20% of total cover: <u>5.8</u>	<u>Prevalence Index = B/A=</u> <u>3.69</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Dryopteris expansa</u>	50	Yes	FACU	<u>    </u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	15	No	FAC	<u>    </u> Prevalence Index is ≤3.0
3. <u>Athyrium cyclosorum</u>	5	No	FAC	<u>    </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Gymnocarpium dryopteris</u>	5	No	FACU	<u>    </u> data in Remarks or on a separate sheet)
5. <u>Trientalis europaea</u>	5	No	FACU	<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Equisetum arvense</u>	3	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Chamaenerion angustifolium</u>	3	No	FACU	
8. <u>Streptopus amplexifolius</u>	2	No	FAC	
9. <u>Aconitum delphinifolium</u>	1	No	FAC	
10. <u>Rubus pedatus</u>	1	No	FAC	
Total Cover: <u>91</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>    </u> No <u>    </u> <u>X</u>
50% of total cover: <u>45.5</u>			20% of total cover: <u>18.2</u>	
Plot size (radius, or length x width) <u>25 X 25 feet</u>			% Bare Ground <u>    </u>	
% Cover of Wetland Bryophytes <u>0</u>	% Cover of Bryophytes <u>0</u>			
(Where applicable)				

Remarks:  
 OBF within larger OMF polygon.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-4									hor:Oe
4-8	5YR 2.5/2	100					N/A	Silt Loam	hor:A
8-9	10YR 4/2	100					N/A	Silt Loam	hor:A1 *4
9-20	7.5YR 2.5/2	50					N/A	Sandy Loam	hor:B *5
9-20	7.5YR 2.5/3	50					N/A	Sandy Loam	hor:B *6

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed. \*4: Half inch to one inch seam of ash with organic staining. \*5: Small pockets of organic staining throughout. \*6: Small pockets of organic staining throughout.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Saturation Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
(includes capillary fringe)									
					<b>Wetland Hydrology Present?</b>	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7047\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
<u>Lycopodium annotinum s.l.</u>	<u>1</u>	<u>No</u>	<u>FACU</u>

Additional Reference Data: Photos

HDR7047\_19



Photo Name: Photo\_190630150408



Photo Name: Photo\_190630150341



## Additional Reference Data: Photos

HDR7047\_19



**Photo Name:** Photo\_190630150330



**Photo Name:** Photo\_190630150459



**Photo Name:** Photo\_190630150515

**Photo Name:** Photo\_190630150422



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/30/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7048_19</u>	
Investigators: <u>ZH, AH</u>	Landform (hillslope, terrace, etc.): <u>Hillside</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>5</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.812199</u>	Long: <u>-154.717667</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Bluejoint Tall Grass (BTG)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)

Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No     

Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover:	<u>    </u>			<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>    </u> Multiply by: OBL species <u>    </u> x1= <u>    </u> FACW species <u>7</u> x2= <u>14</u> FAC species <u>108</u> x3= <u>324</u> FACU species <u>35</u> x4= <u>140</u> UPL species <u>    </u> x5= <u>    </u> Column Totals: <u>150</u> (A) <u>478</u> (B)  Prevalence Index = B/A= <u>3.19</u>
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	
<b>Sapling/Shrub Stratum</b>				
1. <u>Alnus sinuata</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Ribes laxiflorum</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover:	<u>15</u>			<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover:	<u>7.5</u>	20% of total cover:	<u>3</u>	
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>90</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Chamaenerion angustifolium</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	
3. <u>Heracleum maximum</u>	<u>7</u>	<u>No</u>	<u>FACU</u>	
4. <u>Sanguisorba canadensis</u>	<u>7</u>	<u>No</u>	<u>FACW</u>	
5. <u>Equisetum sylvaticum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
6. <u>Gymnocarpium dryopteris</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
7. <u>Rubus pedatus</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
8. <u>Geranium erianthum</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover:	<u>135</u>			<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>    </u>
50% of total cover:	<u>67.5</u>	20% of total cover:	<u>27</u>	
Plot size (radius, or length x width) <u>20 X 40 feet</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>0</u> (Where applicable)				
Remarks:				

Blue joint dense and approximately 4 - 5.5 ft tall. Overtops most other plants. Opening in forest canopy, surrounding forest is OMF.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oi
3-13	7.5YR 3/2	100					N/A	Silt Loam	hor:A1
13-16	7.5YR 3/4	100					N/A	Sandy Loam	hor:B
16-22	7.5YR 2.5/2	100					N/A	Silt Loam	hor:Ab

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed

Geomorphic Position:

## Additional Reference Data: Photos

HDR7048\_19



**Photo Name:** Photo\_190630154932



**Photo Name:** Photo\_190630155007



**Photo Name:** Photo\_190630155033

## Additional Reference Data: Photos

HDR7048\_19



**Photo Name:** Photo\_190630154918



**Photo Name:** Photo\_190630155022



**Photo Name:** Photo\_190630154956



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/9/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7301_19</u>	
Investigators: <u>ZH AH</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>2</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.343567</u>	Long: <u>-154.396835</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
NW1 Classification: <u>PEM1C</u>		

Vegetation Type: Subarctic Sedge – Moss Wet Meadow (SSMWM)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>      </u> Multiply by: <u>      </u> OBL species <u>76</u> x1= <u>76</u> FACW species <u>15</u> x2= <u>30</u> FAC species <u>36</u> x3= <u>108</u> FACU species <u>5</u> x4= <u>20</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>132</u> (A) <u>234</u> (B)  Prevalence Index = B/A= <u>1.77</u>
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
Sapling/Shrub Stratum				
1. <u>Vaccinium uliginosum</u>	15	Yes	FAC	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% X Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Salix pulchra</u>	5	Yes	FAC	
3. <u>Salix fuscescens</u>	3	No	FACW	
4. <u>Alnus sinuata</u>	1	No	FAC	
5. <u>Andromeda polifolia</u>	1	No	FACW	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>25</u>				<b>Hydrophytic Vegetation</b> Yes <u>X</u> No <u>      </u> <b>Present?</b>
50% of total cover: <u>12.5</u>		20% of total cover: <u>5</u>		
Herb Stratum				
1. <u>Trichophorum caespitosum</u>	65	Yes	OBL	<b>Hydrophytic</b> <b>Vegetation</b> Yes <u>X</u> No <u>      </u> <b>Present?</b>
2. <u>Sedum rosea ssp. integrifolium</u>	7	No	FAC	
3. <u>Calamagrostis canadensis</u>	5	No	FAC	
4. <u>Anemone narcissiflora</u>	5	No	FACU	
5. <u>Carex macrochaeta</u>	5	No	FACW	
6. <u>Eriophorum angustifolium</u>	5	No	OBL	
7. <u>Potentilla palustris</u>	5	No	OBL	
8. <u>Swertia perennis</u>	3	No	FAC	
9. <u>Juncus castaneus</u>	3	No	FACW	
10. <u>Pedicularis labradorica</u>	1	No	FACW	
Total Cover: <u>107</u>				
50% of total cover: <u>53.5</u>		20% of total cover: <u>21.4</u>		
Plot size (radius, or length x width) <u>20 X 20 feet</u>		% Bare Ground <u>15</u>		
% Cover of Wetland Bryophytes <u>35</u>		% Cover of Bryophytes <u>35</u>		
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi
2-5									hor:Oe Stone restrictive layer at 5".

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type: Stone			
Depth (inches): 5			
Field Drainage Class: PD - Poorly Drained			
		<b>Hydric Soil Present?</b>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Remarks: Organics of any thickness resting on rock restrictive layer meets NRCS definition of histosol.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input checked="" type="checkbox"/> Algal Mat or Crust (B4)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		
Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 1.0		
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):		
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):		
(includes capillary fringe)		
	<b>Wetland Hydrology Present?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Attempted several pits, all restricted within approximately 5 inches. Surface water present in shallow, cobble bottom, mostly unvegetated pools that have sediment deposits and dried algal mats. Area covered by snow late into the growing season.
Geomorphic Position: Toeslope

Additional Reference Data: Overflow Vegetation

HDR7301\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Platanthera dilatata	1	No	FACW
Sanquisorba canadensis	1	No	FACW
Drosera rotundifolia	1	No	OBL

Additional Reference Data: Photos

HDR7301\_19



Photo Name: Photo\_190709124507



Photo Name: Photo\_190709124608



## Additional Reference Data: Photos

HDR7301\_19



**Photo Name:** Photo\_190709124424



**Photo Name:** Photo\_190709124628



**Photo Name:** Photo\_190709124651

Photo Name: Photo\_190709124554



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/9/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7302_19</u>	
Investigators: <u>ZH, AH</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>9</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.343517</u>	Long: <u>-154.396454</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Alder Tall Shrub (OATS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>6</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>67</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index Worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Alnus sinuata</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>Salix barclayi</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACW species <u>15</u> x2= <u>30</u>
3. <u>Vaccinium uliginosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>123</u> x3= <u>369</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>33</u> x4= <u>132</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>171</u> (A) <u>531</u> (B)
Total Cover: <u>90</u>				<u>Prevalence Index = B/A=</u> <u>3.11</u>
50% of total cover: <u>45</u>				<b>Hydrophytic Vegetation Indicators:</b>
20% of total cover: <u>18</u>				<u>X</u> Dominance Test is >50%
<u>Herb Stratum</u>				<u>      </u> Prevalence Index is ≤3.0
1. <u>Athyrium cyclosorum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
2. <u>Dryopteris expansa</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
3. <u>Sanguisorba canadensis</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4. <u>Calamagrostis canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. <u>Angelica lucida</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	
6. <u>Carex sp.</u>	<u>7</u>	<u>No</u>	<u>N/A</u>	
7. <u>Rubus pedatus</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
8. <u>Trientalis europaea</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	<b>Hydrophytic Vegetation</b> Yes <u>X</u> No <u>      </u> <b>Present?</b>
9. <u>Veratrum viride</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
10. <u>Epilobium angustifolium</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>90</u>				
50% of total cover: <u>45</u>				
20% of total cover: <u>18</u>				
Plot size (radius, or length x width) <u>20 X 20 feet</u>				
% Bare Ground <u>40</u>				
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <sup>5</sup> <u>      </u>		
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oe
1-2	10YR 5/2	90	10YR 4/4	10	C	M	N/A	Very Fine Sandy	hor:C Ash
2-5	10YR 2/2	100					N/A	Silt Loam	hor:A/B
5-20	10YR 3/3	100					N/A	Silt Loam	hor:B 10% coarse gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Saturation Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
(includes capillary fringe)					<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> <input checked="" type="checkbox"/>				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7302\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Viola sp.	2	No	N/A

Additional Reference Data: Photos

HDR7302\_19



Photo Name: Photo\_190709123916



Photo Name: Photo\_190709123909

## Additional Reference Data: Photos

HDR7302\_19



**Photo Name:** Photo\_190709123847



**Photo Name:** Photo\_190709123925



**Photo Name:** Photo\_190709123902



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/23/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7500_19</u>	
Investigators: <u>MAC S, ASHLEY H</u>	Landform (hillslope, terrace, etc.): <u>Bench</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>0</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.796570</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS3/1B</u>	

Vegetation Type: Open Dwarf Birch – Ericaceous Shrub Bog (ODBESB)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>6</u> <u>Multiply by:</u>
2. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>6</u> x1= <u>6</u>
3. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACW species <u>73</u> x2= <u>146</u>
4. <u>Andromeda polifolia</u>	<u>7</u>	<u>No</u>	<u>FACW</u>	FAC species <u>104</u> x3= <u>312</u>
5. <u>Rhododendron tomentosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACU species <u>3</u> x4= <u>12</u>
6. <u>Vaccinium vitis-idaea</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>93</u>				Column Totals: <u>186</u> (A) <u>476</u> (B)
50% of total cover: <u>46.5</u>				<u>Prevalence Index = B/A=</u> <u>2.56</u>
20% of total cover: <u>18.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Rubus chamaemorus</u>	<u>65</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex bigelowii</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Carex pluriflora</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Drosera rotundifolia</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Equisetum arvense</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Lycopodium annotinum s.l.</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
7. <u>Rumex arcticus</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Spiranthes romanzoffiana</u>	<u>1</u>	<u>No</u>	<u>OBL</u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>93</u>				
50% of total cover: <u>46.5</u>				
20% of total cover: <u>18.6</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>70</u>				
% Cover of Bryophytes <u>70</u>				
(Where applicable)				
Remarks: <u>Lichens 10%. Hummocks moderate.</u>				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-8							N/A		hor:Oi
8-20							N/A		hor:Oe

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> X Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	12.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Moist at 4".  
  
Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7500\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Picea glauca	2	No	FACU
Salix pulchra	1	No	FAC
Vaccinium oxycoccos	1	No	OBL

Additional Reference Data: Photos

HDR7500\_19



Photo Name: Photo\_190723082810



Photo Name: Photo\_190723082742





**Photo Name:** Photo\_190723082802



**Photo Name:** Photo\_190723082716

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/23/2019  
 Applicant/Owner: PLP Sampling Point: HDR7501\_19  
 Investigators: MAC S, ASHLEY H Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): None Slope(%): 1 HGM: N/A  
 Subregion (LRR): X Lat: 59.796658 Long: -154.641281 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Mixed Forest Woodland (MFW)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Betula kenaica</u>	15	Yes	FACU	Number of Dominant Species
2. <u>Picea glauca (tree)</u>	10	Yes	FACU	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>				Total Number of Dominant
4. <u>      </u>				Species Across All Strata: <u>6</u> (B)
Total Cover: <u>25</u>				Percent of Dominant Species
50% of total cover: <u>12.5</u>		20% of total cover: <u>5</u>		That Are OBL, FACW, or FAC: <u>67</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Rhododendron tomentosum</u>	80	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Empetrum nigrum</u>	70	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium vitis-idaea</u>	45	No	FAC	FACW species <u>2</u> x2= <u>4</u>
4. <u>Betula nana</u>	30	No	FAC	FAC species <u>248</u> x3= <u>744</u>
5. <u>Vaccinium uliginosum</u>	10	No	FAC	FACU species <u>43</u> x4= <u>172</u>
6. <u>Betula kenaica</u>	10	No	FACU	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>257</u>				Column Totals: <u>293</u> (A) <u>920</u> (B)
50% of total cover: <u>128.5</u>		20% of total cover: <u>51.4</u>		<u>Prevalence Index = B/A=</u> <u>3.14</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	5	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Rubus chamaemorus</u>	2	Yes	FACW	<u>      </u> Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	1	No	FAC	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Chamaenerion angustifolium</u>	1	No	FACU	data in Remarks or on a separate sheet)
5. <u>Gymnocarpium dryopteris</u>	1	No	FACU	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Trientalis europaea</u>	1	No	FACU	
7. <u>      </u>				<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>				must be present, unless disturbed or problematic.
9. <u>      </u>				
10. <u>      </u>				
Total Cover: <u>11</u>				
50% of total cover: <u>5.5</u>		20% of total cover: <u>2.2</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>0</u>		<b>Hydrophytic</b>
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>80</u>		<b>Vegetation</b>
(Where applicable)				Yes <u>X</u> No <u>      </u>
				<b>Present?</b>

Remarks:  
Lichen 5%. MFW overall is better fit for vegetation community.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-3	10YR 2/1	100					N/A	Silt Loam	hor:A With organic staining
3-4	2.5Y 5/2	50					N/A	Very Fine Sandy	hor:C Ash
3-4	2.5Y 6/1	50					N/A	Very Fine Sandy	hor:C Ash
4-9	7.5YR 2.5/3	100					N/A	Sandy Loam	hor:B1
9-20	10YR 4/6	100					N/A	Sandy Loam	hor:B2 5% coarse gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Dry throughout profile. As such, alpha-alpha not tested.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR7501\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Salix barclayi	5	No	FAC
Spiraea stevenii	5	No	FACU
Salix glauca	2	No	FAC

Additional Reference Data: Photos

HDR7501\_19



Photo Name: Photo\_190723090955



Photo Name: Photo\_190723091009

## Additional Reference Data: Photos

HDR7501\_19



**Photo Name:** Photo\_190723091030



**Photo Name:** Photo\_190723091023

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/23/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7503_19</u>	
Investigators: <u>MAC S, ASHLEY H.</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>3</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.794159</u>	Long: <u>-154.638718</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Dwarf Birch – Ericaceous Shrub Bog (ODBESB)</u>		NWI Classification: <u>PSS3/1B</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index Worksheet:</b>				
<u>Sapling/Shrub Stratum</u>				
1. <u>Empetrum nigrum</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>28</u> x1= <u>28</u>
2. <u>Betula nana</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>22</u> x2= <u>44</u>
3. <u>Rhododendron tomentosum</u>	<u>25</u>	<u>No</u>	<u>FAC</u>	FAC species <u>156</u> x3= <u>468</u>
4. <u>Vaccinium uliginosum</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FACU species <u>1</u> x4= <u>4</u>
5. <u>Vaccinium vitis-idaea</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>Vaccinium oxycoccos</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	Column Totals: <u>207</u> (A) <u>544</u> (B)
Total Cover: <u>139</u>				<u>Prevalence Index = B/A=</u> <u>2.63</u>
50% of total cover: <u>69.5</u>				
20% of total cover: <u>27.8</u>				
<u>Herb Stratum</u>				
1. <u>Carex bigelowii</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Rubus chamaemorus</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Carex pluriflora</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Eriophorum angustifolium</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	data in Remarks or on a separate sheet)
5. <u>Calamagrostis canadensis</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Pedicularis parviflora</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
7. <u>Drosera rotundifolia</u>	<u>1</u>	<u>No</u>	<u>OBL</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>68</u>				
50% of total cover: <u>34</u>				
20% of total cover: <u>13.6</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>5</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>80</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>80</u>				<b>Present?</b>
(Where applicable)				
Remarks: <u>Bare ground 5%. Lichen 10%.</u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-16							N/A		hor:Oi
16-24							N/A		hor:Oe

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	VPD - Very Poorly Drained				

Remarks: H2S at 12 inches.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)		<input checked="" type="checkbox"/> X Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> X Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> X Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input checked="" type="checkbox"/> X Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	17.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	12.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Saturated starting at 12 inches; moist to surface. Dark bare depressions typically ponded.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Picea glauca	1	No	FACU
Salix fuscescens	1	No	FACW

Additional Reference Data: Photos

HDR7503\_19



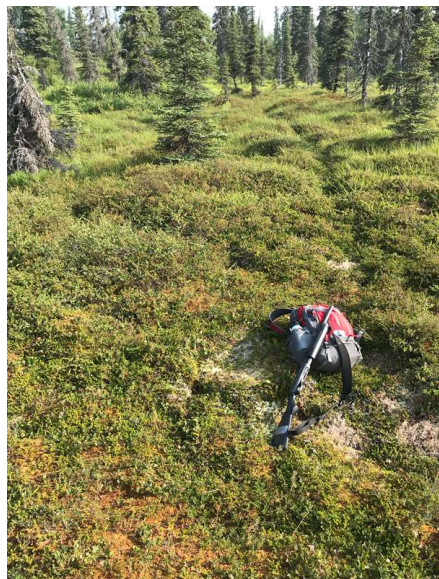
Photo Name: Photo\_190723101259



Photo Name: Photo\_190723101241

## Additional Reference Data: Photos

HDR7503\_19



**Photo Name:** Photo\_190723101249



**Photo Name:** Photo\_190723101224



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/23/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7504_19</u>	
Investigators: <u>MAC S, ASHLEY H</u>	Landform (hillslope, terrace, etc.): <u>Swale</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>2</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.793262</u>	Long: <u>-154.639633</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Mixed Forest (OMF)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center. Dry swale. Plot covers bottom of swale and portion of side slopes. Pit in bottom of swale.	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Betula kenaica (tree)</u>	20	Yes	FACU	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
2. <u>Salix barclayi (trees)</u>	15	Yes	FAC	
3. <u>Picea glauca (tree)</u>	7	No	FACU	
4. <u>      </u>				
Total Cover: <u>42</u>				<b>Prevalence Index Worksheet:</b> <u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u> OBL species <u>      </u> x1= <u>      </u> FACW species <u>5</u> x2= <u>10</u> FAC species <u>116</u> x3= <u>348</u> FACU species <u>49</u> x4= <u>196</u> UPL species <u>2</u> x5= <u>10</u> Column Totals: <u>172</u> (A) <u>564</u> (B)  <i>Prevalence Index = B/A=</i> <u>3.28</u>
50% of total cover: <u>21</u>		20% of total cover: <u>8.4</u>		
<u>Sapling/Shrub Stratum</u>				
1. <u>Salix barclayi</u>	10	Yes	FAC	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
2. <u>Salix pulchra</u>	5	Yes	FAC	
3. <u>Viburnum edule</u>	5	Yes	FACU	
4. <u>Ribes glandulosum</u>	3	No	FAC	
5. <u>Spiraea stevenii</u>	3	No	FACU	
6. <u>Vaccinium vitis-idaea</u>	2	No	FAC	
Total Cover: <u>30</u>				
50% of total cover: <u>15</u>		20% of total cover: <u>6</u>		
<u>Herb Stratum</u>				
1. <u>Calamagrostis canadensis</u>	70	Yes	FAC	
2. <u>Equisetum arvense</u>	5	No	FAC	
3. <u>Gymnocarpium dryopteris</u>	5	No	FACU	
4. <u>Sanguisorba stipulata</u>	5	No	FACW	
5. <u>Chamaenerion angustifolium</u>	4	No	FACU	
6. <u>Rubus stellatus</u>	2	No	FAC	
7. <u>Thalictrum sparsiflorum</u>	2	No	FACU	
8. <u>Trientalis europaea</u>	2	No	FACU	
9. <u>Aconitum delphinifolium</u>	1	No	FAC	
10. <u>Streptopus amplexifolius</u>	1	No	FAC	
Total Cover: <u>100</u>				
50% of total cover: <u>50</u>		20% of total cover: <u>20</u>		
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>5</u>				
% Cover of Wetland Bryophytes <u>0</u> (Where applicable)		% Cover of Bryophytes <sup>5</sup> <u>      </u>		

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oe
2-14	7.5YR 2.5/2	100					No	Silt Loam	hor:A
14-20	10YR 3/2	92	5YR 3/4	5	C	PL	No	Silt Loam	hor:B 2% coarse gravel
14-20			5YR 4/6	3	C	PL	No	Silt Loam	hor:B 2% coarse gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: <u>None</u>	
Depth (inches): <u>N/A</u>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
Field Drainage Class: <u>MWD - Moderately Well Drained</u>	

Remarks: Moist in A and B layers, but not saturated. Not saturated to 24 inches.

HYDROLOGY

Wetland Hydrology Indicators:				Secondary Indicators (2 or more required)			
Primary Indicators (minimum of one required; check all that apply)							
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Water-stained Leaves (B9)			
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Drainage Patterns (B10)			
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)		<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)			
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)		<input type="checkbox"/> Presence of Reduced Iron (C4)			
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)		<input type="checkbox"/> Salt Deposits (C5)			
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)		<input type="checkbox"/> Stunted or Stressed Plants (D1)			
<input type="checkbox"/> Algal Mat or Crust (B4)				<input type="checkbox"/> Geomorphic Position (D2)			
<input type="checkbox"/> Iron Deposits (B5)				<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Surface Soil Cracks (B6)				<input type="checkbox"/> Microtopographic Relief (D4)			
<input type="checkbox"/>				<input type="checkbox"/> FAC-Neutral Test (D5)			
<b>Field Observations:</b>				<b>Wetland Hydrology Present?</b> <b>Yes</b> <input type="checkbox"/> <b>No</b> <input checked="" type="checkbox"/>			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/>	Depth (inches):	<input type="text"/>				
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/>	Depth (inches):	<input type="text"/>				
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/>	Depth (inches):	<input type="text"/>				
(includes capillary fringe)							

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Moist in A and B soil horizons, but not saturated. Not saturated to 24". No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7504\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
Valeriana capitata	1	No	FAC
Viola epipsila	1	No	FAC
Dryopteris expansa	1	No	FACU
<b>Sapling/Shrub</b>			
Linnaea borealis	2	No	UPL

Additional Reference Data: Photos

HDR7504\_19



Photo Name: Photo\_190723111341



Photo Name: Photo\_190723111410



## Additional Reference Data: Photos

HDR7504\_19



**Photo Name:** Photo\_190723111418



**Photo Name:** Photo\_190723111356

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/23/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7506_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>1</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u> Lat: <u>59.779716</u>	Long: <u>-154.635651</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1/EM1C</u>	

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>6</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>6</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Salix pulchra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>23</u> <u>Multiply by:</u>
2. <u>Betula nana</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>23</u> x1= <u>23</u>
3. <u>Empetrum nigrum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>14</u> x2= <u>28</u>
4. <u>Vaccinium uliginosum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	FAC species <u>138</u> x3= <u>414</u>
5. <u>Rhododendron tomentosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>5</u> x4= <u>20</u>
6. <u>Vaccinium vitis-idaea</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>96</u>				Column Totals: <u>180</u> (A) <u>485</u> (B)
50% of total cover: <u>48</u>				<u>Prevalence Index = B/A=</u> <u>2.69</u>
20% of total cover: <u>19.2</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Rubus chamaemorus</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Eriophorum scheuchzeri</u>	<u>10</u>	<u>No</u>	<u>OBL</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Comarum palustre</u>	<u>7</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Equisetum sylvaticum</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
7. <u>Drosera rotundifolia</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Rumex arcticus</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	must be present, unless disturbed or problematic.
9. <u>Carex canescens</u>	<u>1</u>	<u>No</u>	<u>OBL</u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>84</u>				
50% of total cover: <u>42</u>				
20% of total cover: <u>16.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>5</u>				
% Cover of Wetland Bryophytes <u>80</u> % Cover of Bryophytes <u>80</u>				
(Where applicable)				
Remarks: <u>Lichen 5%. Bare ground is microlows with organic bottom. Microlows have iron floc and biogenic sheen. Plot located in in more open spot of poly that is overall OWLS.</u>				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-13							N/A		hor:Oi
13-20	10YR 2/1	100					N/A	Sandy Loam	hor:A *2
20-24	2.5Y 3/3	100					N/A	Coarse Sandy	hor:B/C Gravels 10%. Sand 50%.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	VPD - Very Poorly Drained				

Remarks: H2S at 8 inches. \*2: High percentage of organics. Gravels 5%.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> X Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input checked="" type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> X Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	3.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	4.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	0.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Biogenic sheen and iron floc in microlows.

Geomorphic Position: Toeslope



Additional Reference Data: Overflow Vegetation

HDR7506\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Spiraea stevenii	3	No	FACU
Salix fuscescens	3	No	FACW
Vaccinium oxycoccos	3	No	OBL
Betula kenaica	2	No	FACU

Additional Reference Data: Photos

HDR7506\_19



Photo Name: Photo\_190723131905



Photo Name: Photo\_190723132036

## Additional Reference Data: Photos

HDR7506\_19



**Photo Name:** Photo\_190723132001



**Photo Name:** Photo\_190723132126



**Photo Name:** Photo\_190723132109



**Photo Name:** Photo\_190723131937



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/23/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7507_19</u>	
Investigators: <u>MAC S, ASHLEY H</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>1</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.779785</u>	Long: <u>-154.634872</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Subarctic Sedge – Moss Wet Meadow (SSMWM)</u>		NWI Classification: <u>PEM1C</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Salix fuscescens</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	<u>Total % Cover of:</u> <u>91</u> <u>Multiply by:</u>
2. <u>Salix pulchra</u>	<u>8</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>91</u> x1= <u>91</u>
3. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>25</u> x2= <u>50</u>
4. <u>Vaccinium oxycoccos</u>	<u>3</u>	<u>No</u>	<u>OBL</u>	FAC species <u>18</u> x3= <u>54</u>
5. <u>Salix alaxensis</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>38</u>				Column Totals: <u>134</u> (A) <u>195</u> (B)
50% of total cover: <u>19</u>				<u>Prevalence Index = B/A=</u> <u>1.46</u>
20% of total cover: <u>7.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Eriophorum scheuchzeri</u>	<u>60</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Dominance Test is >50%
2. <u>Comarum palustre</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Carex macrochaeta</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex aquatilis</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Calamagrostis canadensis</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Carex rariflora</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	
7. <u>Drosera rotundifolia</u>	<u>1</u>	<u>No</u>	<u>OBL</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>96</u>				
50% of total cover: <u>48</u>				
20% of total cover: <u>19.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>90</u>				Yes <u>X</u> No <u>      </u>
(Where applicable)				<b>Present?</b>

Remarks:  
Water 10%.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A		hor:Oi
4-21							N/A		hor:Oe

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	VPD - Very Poorly Drained				

Remarks: Rocks at 21 inches. H2S at 4 inches.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> X Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input checked="" type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	4.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	1.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	0.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
H2S at 4". Biogenic sheen on surface water.

Geomorphic Position: Toeslope

## Additional Reference Data: Photos

HDR7507\_19



**Photo Name:** Photo\_190723135401



**Photo Name:** Photo\_190723135353



**Photo Name:** Photo\_190723135333



## Additional Reference Data: Photos

HDR7507\_19

Photo Name: Photo\_190723135325



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/23/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7508_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>3</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.780418</u>	Long: <u>-154.636353</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Dwarf Birch Shrub (ODBS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Picea glauca (tree)</u>	5	Yes	FACU	Number of Dominant Species
2. <u>      </u>				That Are OBL, FACW, or FAC: <u>6</u> (A)
3. <u>      </u>				Total Number of Dominant
4. <u>      </u>				Species Across All Strata: <u>8</u> (B)
Total Cover: <u>5</u>				Percent of Dominant Species
50% of total cover: <u>2.5</u>		20% of total cover: <u>1</u>		That Are OBL, FACW, or FAC: <u>75</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Betula nana</u>	20	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u>
2. <u>Rhododendron tomentosum</u>	20	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium uliginosum</u>	20	Yes	FAC	FACW species <u>7</u> x2= <u>14</u>
4. <u>Betula glandulosa</u>	15	Yes	FAC	FAC species <u>138</u> x3= <u>414</u>
5. <u>Spiraea stevenii</u>	15	Yes	FACU	FACU species <u>26</u> x4= <u>104</u>
6. <u>Vaccinium vitis-idaea</u>	10	No	FAC	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>120</u>				Column Totals: <u>171</u> (A) <u>532</u> (B)
50% of total cover: <u>60</u>		20% of total cover: <u>24</u>		<u>Prevalence Index = B/A=</u> <u>3.11</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	15	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	15	Yes	FAC	<u>      </u> Prevalence Index is ≤3.0
3. <u>Rubus chamaemorus</u>	7	No	FACW	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex bigelowii</u>	5	No	FAC	data in Remarks or on a separate sheet)
5. <u>Equisetum sylvaticum</u>	3	No	FAC	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Chamaenerion angustifolium</u>	1	No	FACU	
7. <u>      </u>				<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>				must be present, unless disturbed or problematic.
9. <u>      </u>				
10. <u>      </u>				
Total Cover: <u>46</u>				
50% of total cover: <u>23</u>		20% of total cover: <u>9.2</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>0</u>		<b>Hydrophytic</b>
% Cover of Wetland Bryophytes <u>50</u>		% Cover of Bryophytes <u>75</u>		<b>Vegetation</b>
(Where applicable)				Yes <u>X</u> No <u>      </u>
Remarks:				<b>Present?</b>
Lichen 3%.				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A		hor:Oi
5-10	10YR 2/1	70					N/A	Silt Loam	hor:A
5-10	10YR 4/2	30					N/A	Silt Loam	hor:A
10-13	5YR 3/2	20					No	Sandy Loam	hor:B1 Cobbles 10%
10-13	10YR 3/3	80					No	Sandy Loam	hor:B1 Cobbles 10%
13-20	7.5YR 4/3	50					No	Sandy Loam	hor:B2
13-20	10YR 4/4	50					No	Sandy Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Dry pit.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)	<input type="checkbox"/>	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/>	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Salt Deposits (C5)	<input type="checkbox"/>	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/>	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/>	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> FAC-Neutral Test (D5)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)				
<input type="checkbox"/> Algal Mat or Crust (B4)					
<input type="checkbox"/> Iron Deposits (B5)					
<input type="checkbox"/> Surface Soil Cracks (B6)					
<b>Field Observations:</b>					
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):			
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):			
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):			
(includes capillary fringe)					
			<b>Wetland Hydrology Present?</b>	Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR7508\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Salix pulchra	7	No	FAC
Salix glauca	5	No	FAC
Salix barclayi	3	No	FAC
Picea glauca	3	No	FACU
Betula kenaica	2	No	FACU

Additional Reference Data: Photos

HDR7508\_19



Photo Name: Photo\_190723145258



Photo Name: Photo\_190723145330

## Additional Reference Data: Photos

HDR7508\_19



**Photo Name:** Photo\_190723145402



**Photo Name:** Photo\_190723145448



**Photo Name:** Photo\_190723145416



## Additional Reference Data: Photos

HDR7508\_19

**Photo Name:** Photo\_190723145352





Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	7/24/2019
Applicant/Owner:	PLP			Sampling Point:	HDR7512_19
Investigators:	MAC S, ASHLEY H	Landform (hillslope, terrace, etc.):	Terrace		
Local Relief (concave, convex, none):	None	Slope(%):	1	HGM:	N/A
Subregion (LRR):	X	Lat:	59.777519	Long:	-154.637466
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.) \_\_\_\_\_

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1.	Betula kenaica (tree)	35	Yes	FACU	Number of Dominant Species	
2.	Salix glauca (tree)	20	Yes	FAC	That Are OBL, FACW, or FAC: 5 (A)	
3.	Betula papyrifera s.l. (tree)	7	No	FACU	Total Number of Dominant	
4.					Species Across All Strata: 7 (B)	
Total Cover:		62			Percent of Dominant Species	
50% of total cover:		31	20% of total cover:	12.4	That Are OBL, FACW, or FAC: 71 (A/B)	
Sapling/Shrub Stratum					Prevalence Index Worksheet:	
1.	Salix glauca	10	Yes	FAC	Total % Cover of: Multiply by:	
2.	Betula kenaica	10	Yes	FACU	OBL species	12 x1= 12
3.	Salix pulchra	5	Yes	FAC	FACW species	x2=
4.					FAC species	169 x3= 507
5.					FACU species	73 x4= 292
6.					UPL species	x5=
Total Cover:		25			Column Totals:	254 (A) 811 (B)
50% of total cover:		12.5	20% of total cover:	5	Prevalence Index = B/A= 3.19	
Herb Stratum					Hydrophytic Vegetation Indicators:	
1.	Calamagrostis canadensis	80	Yes	FAC	X Dominance Test is >50%	
2.	Equisetum sylvaticum	40	Yes	FAC	Prevalence Index is ≤3.0	
3.	Chamaenerion angustifolium	20	No	FACU	Morphological Adaptations <sup>1</sup> (Provide	
4.	Comarum palustre	12	No	OBL	data in Remarks or on a separate sheet)	
5.	Polemonium acutiflorum	5	No	FAC	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
6.	Aconitum delphiniifolium	4	No	FAC	*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
7.	Rubus stellatus	3	No	FAC		
8.	Viola epipsila	2	No	FAC		
9.	Trientalis europaea	1	No	FACU		
10.						
Total Cover:		167			Hydrophytic	
50% of total cover:		83.5	20% of total cover:	33.4	Vegetation	
Plot size (radius, or length x width) 1/10 acre			% Bare Ground	0	Yes X No	
% Cover of Wetland Bryophytes 0		% Cover of Bryophytes 5		Present?		
(Where applicable)						

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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-4							N/A		hor:Oe
4-6	10YR 2/1	100					N/A	Silt Loam	hor:A
6-15	10YR 3/3	90	10YR 4/6	10	C	PL	No	Silt Loam	hor:B1
15-22	2.5Y 4/2	90	5YR 4/6	10	C	PL	Yes	Silt Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

<b>Hydric Soil Indicators:</b>	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: <u>None</u>	
Depth (inches): <u>N/A</u>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>
Field Drainage Class: <u>MWD - Moderately Well Drained</u>	

Remarks: B layers slightly moist but not saturated; dry above. Based on the lack of saturation at 22 inches, dry season water table unlikely. Alaska Redox with 2.5Y Hue not met, due to lack of primary hydrology indicators.

HYDROLOGY

<b>Wetland Hydrology Indicators:</b>	<b>Secondary Indicators (2 or more required)</b>
Primary Indicators (minimum of one required; check all that apply)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>	
Surface Water Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/> Depth (inches): <u>                    </u>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>
Water Table Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/> Depth (inches): <u>                    </u>	
Saturation Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/> Depth (inches): <u>                    </u> (includes capillary fringe)	

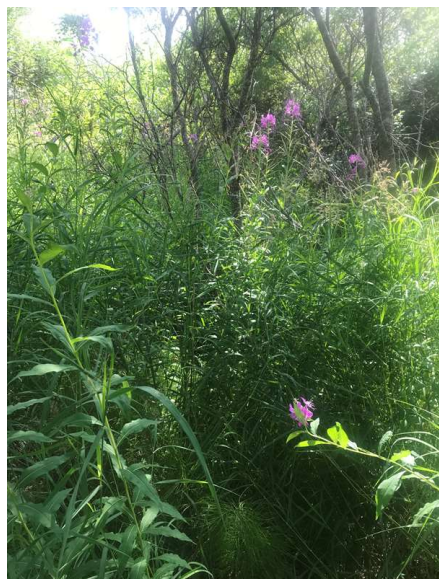
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Based on the lack of saturation at 22 inches, dry season water table unlikely. No primary or secondary hydrology indicators observed.

Geomorphic Position:

## Additional Reference Data: Photos

HDR7512\_19



**Photo Name:** Photo\_190723163437



**Photo Name:** Photo\_190723163431



**Photo Name:** Photo\_190723163408



## Additional Reference Data: Photos

HDR7512\_19

Photo Name: Photo\_190723163348



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/24/2019  
 Applicant/Owner: PLP Sampling Point: HDR7514\_19  
 Investigators: MAC S., ASHLEY H. Landform (hillslope, terrace, etc.): Terrace  
 Local Relief (concave, convex, none): None Slope(%): 2 HGM: Slope  
 Subregion (LRR): X Lat: 59.875423 Long: -155.298752 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Open Willow Tall Shrub (OWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil X or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center. Adjacent to stream.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index Worksheet:</b>				
<u>Sapling/Shrub Stratum</u>				
1. <u>Salix pulchra</u>	<u>75</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by: <u>      </u>
2. <u>Spiraea stevenii</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	OBL species <u>4</u> x1= <u>4</u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>15</u> x2= <u>30</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>194</u> x3= <u>582</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>18</u> x4= <u>72</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>80</u>				Column Totals: <u>231</u> (A) <u>688</u> (B)
50% of total cover: <u>40</u>				Prevalence Index = B/A= <u>2.98</u>
20% of total cover: <u>16</u>				
<u>Herb Stratum</u>				
1. <u>Calamagrostis canadensis</u>	<u>75</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b>
2. <u>Polemonium acutiflorum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
3. <u>Sanguisorba stipulata</u>	<u>15</u>	<u>No</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
4. <u>Equisetum arvense</u>	<u>12</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
5. <u>Rubus arcticus s.l.</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
6. <u>Viola sp.</u>	<u>10</u>	<u>No</u>	<u>N/A</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
7. <u>Chamaenerion angustifolium</u>	<u>4</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. <u>Comarum palustre</u>	<u>4</u>	<u>No</u>	<u>OBL</u>	
9. <u>Anemone narcissiflora</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
10. <u>Aconitum delphinifolium</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>161</u>				<b>Hydrophytic</b>
50% of total cover: <u>80.5</u>				<b>Vegetation</b>
20% of total cover: <u>32.2</u>				Yes <u>X</u> No <u>      </u>
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Present?</b>
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>				
(Where applicable)				
Remarks: <u>30% of Sal. pul. taller than 5'.</u>				

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

### Indicators for Problematic Hydric Soils<sup>3</sup>:

<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

Type: None

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Depth (inches): N/A

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Field Drainage Class: MWD - Moderately Well Drained

<b>Hydric Soil Present?</b>	Yes	X	No
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Remarks: Positive alpha-alpha test on all mineral layers. Soil profile not saturated to 24"; however, soil moist enough to test alpha-alpha. No primary hydrology indicators observed; however, two secondary hydrology indicators (alpha-alpha and oxidized rhizospheres along living roots) which suggests this site is saturated within the upper 12" of the soil profile during normal conditions. \*2: With organic staining at top of layer. \*3: With organic staining at top of layer. \*5: With organic staining and fibers mixed throughout.

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Surface Water Present?	Yes	<u>      </u>	No	<u>      </u>	X	Depth (inches):	<u>                    </u>
Water Table Present?	Yes	<u>      </u>	No	<u>      </u>	X	Depth (inches):	<u>                    </u>
Saturation Present?	Yes	<u>      </u>	No	<u>      </u>	X	Depth (inches):	<u>                    </u>
(includes capillary fringe)							

Wetland Hydrology Present?	Yes	X	No
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Adjacent to stream. Soil profile not saturated to 24". No primary hydrology indicators observed.

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Additional Reference Data: Overflow Vegetation

HDR7514\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Angelica lucida	2	No	FACU
Dryopteris expansa	2	No	FACU
Trientalis europaea	2	No	FACU

Additional Reference Data: Photos

HDR7514\_19

Photo Name: Photo\_190724124722



Photo Name: Photo\_190724124710



## Additional Reference Data: Photos

HDR7514\_19

**Photo Name:** Photo\_190724124716



**Photo Name:** Photo\_190724124700



**Photo Name:** Photo\_190724124627



## Additional Reference Data: Photos

HDR7514\_19

Photo Name: Photo\_190724124534





# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/24/2019  
 Applicant/Owner: PLP Sampling Point: HDR7517\_19  
 Investigators: MAC S, ASHLEY H. Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): None Slope(%): 3 HGM: Slope  
 Subregion (LRR): X Lat: 59.873386 Long: -155.301666 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Closed Willow Low Shrub (CWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Salix pulchra</u>	<u>75</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>35</u> <u>Multiply by:</u>
2. <u>Vaccinium uliginosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	OBL species <u>35</u> x1= <u>35</u>
3. <u>Betula nana</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>184</u> x3= <u>552</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>3</u> x4= <u>12</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>92</u>				Column Totals: <u>222</u> (A) <u>599</u> (B)
50% of total cover: <u>46</u>				<u>Prevalence Index = B/A=</u> <u>2.70</u>
20% of total cover: <u>18.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Comarum palustre</u>	<u>35</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	<u>25</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus arcticus s.l.</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Pyrola grandiflora</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Anemone richardsonii</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
7. <u>Trientalis europaea</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Moehringia lateriflora</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>130</u>				
50% of total cover: <u>65</u>				
20% of total cover: <u>26</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>5</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <sup>5</sup> <u>      </u>				<b>Present?</b>
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oi
3-16							Yes		hor:Oe H2S at 6".
16-21	2.5Y 3/1	100					Yes	Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks: H2S at 6".

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	21.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	6.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

H2S at 6".

Geomorphic Position:

## Additional Reference Data: Photos

HDR7517\_19



**Photo Name:** Photo\_190724135222



**Photo Name:** Photo\_190724135233



**Photo Name:** Photo\_190724135240



**Photo Name:** Photo\_190724135248



**Photo Name:** Photo\_190724135206



**Photo Name:** Photo\_190724135256



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/24/2019  
 Applicant/Owner: PLP Sampling Point: HDR7518\_19  
 Investigators: MS, AH Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): None Slope(%): 4 HGM: Slope  
 Subregion (LRR): X Lat: 59.873512 Long: -155.301422 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Open Willow Tall Shrub (OWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Salix pulchra</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by: <u>      </u>
2. <u>Spiraea stevenii</u>	<u>7</u>	<u>No</u>	<u>FACU</u>	OBL species <u>10</u> x1= <u>10</u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>2</u> x2= <u>4</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>182</u> x3= <u>546</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>9</u> x4= <u>36</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>77</u>				Column Totals: <u>203</u> (A) <u>596</u> (B)
50% of total cover: <u>38.5</u>				Prevalence Index = B/A= <u>2.94</u>
20% of total cover: <u>15.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Comarum palustre</u>	<u>10</u>	<u>No</u>	<u>OBL</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Polemonium acutiflorum</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Rubus arcticus s.l.</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Anemone richardsonii</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
7. <u>Rubus chamaemorus</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Moehringia lateriflora</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	must be present, unless disturbed or problematic.
9. <u>Trientalis europaea</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>126</u>				
50% of total cover: <u>63</u>				
20% of total cover: <u>25.2</u>				
Plot size (radius, or length x width) <u>15 X 15 feet</u>				
% Bare Ground <u>5</u>				
% Cover of Wetland Bryophytes <u>70</u>				
% Cover of Bryophytes <u>70</u>				
(Where applicable)				

Remarks:  
Lichen 0%.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-8							N/A		hor:Oi
8-15	10YR 3/2	5					Yes	Silt Loam	hor:A *2
8-15	5Y 3/2	95					Yes	Silt Loam	hor:A *3
15-20	5Y 3/1	100					Yes	Coarse Sandy	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	SPD - Somewhat Poorly Drained				

Remarks: H2S at 10 inches. Organics (Oi layer) typically saturated. \*2: 10YR 3/2 is pockets of sand. Organics mixed throughout. H2S at 10 inches. \*3: 10YR 3/2 is pockets of sand. Organics mixed throughout. H2S at 10 inches.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input checked="" type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:					
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	15.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	12.0	
(includes capillary fringe)					
			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:



## Additional Reference Data: Photos

HDR7518\_19



**Photo Name:** Photo\_190724143139



**Photo Name:** Photo\_190724143048



**Photo Name:** Photo\_190724143123

## Additional Reference Data: Photos

HDR7518\_19



**Photo Name:** Photo\_190724143129



**Photo Name:** Photo\_190724143117



**Photo Name:** Photo\_190724143107

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/24/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7520_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>2</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.867470</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1B</u>	

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index Worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Salix pulchra</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>50</u> x1= <u>50</u>
2. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACW species <u>52</u> x2= <u>104</u>
3. <u>Vaccinium uliginosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>106</u> x3= <u>318</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>      </u> x4= <u>      </u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>208</u> (A) <u>472</u> (B)
Total Cover: <u>80</u>				<u>Prevalence Index = B/A=</u> <u>2.27</u>
50% of total cover: <u>40</u>				
20% of total cover: <u>16</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Comarum palustre</u>	<u>35</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex macrochaeta</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Eriophorum russeolum s.l.</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Calamagrostis canadensis</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Carex rariflora</u>	<u>15</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Equisetum arvense</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Polemonium acutiflorum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
8. <u>Polygonum viviparum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
9. <u>Rubus arcticus s.l.</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
10. <u>Anemone richardsonii</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>128</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>64</u>				
20% of total cover: <u>25.6</u>				
Plot size (radius, or length x width) <u>30 X 30 feet</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>70</u>				
(Where applicable)				
Remarks: <u>Bare = dark depression; typically have water.</u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-14							Yes		hor:Oe
14-24	10YR 3/2	100					Yes	Silt Loam	hor:B High organic content.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks: H2S at 14".

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> X	Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> X	Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> X	<input type="checkbox"/>	Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/>	Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Dry Season Water Table (C2)	<input checked="" type="checkbox"/> X	Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/>	Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/>	Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> X	FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	No	<input checked="" type="checkbox"/> X	Depth (inches):	
Water Table Present?	Yes	No	<input checked="" type="checkbox"/> X	Depth (inches):	
Saturation Present?	Yes	No	<input checked="" type="checkbox"/> X	Depth (inches):	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Moist throughout profile, but not saturated.

Geomorphic Position: Toeslope. Small black depressions with bare bottom that typically pond water.

Additional Reference Data: Overflow Vegetation

HDR7520\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Fritillaria camschatcensis	1	No	FAC
Angelica genuflexa	1	No	FACW
Sanquisorba stipulata	1	No	FACW

Additional Reference Data: Photos

HDR7520\_19

Photo Name: Photo\_190724160219



Photo Name: Photo\_190724160140



## Additional Reference Data: Photos

HDR7520\_19



**Photo Name:** Photo\_190724160231



**Photo Name:** Photo\_190724160039



**Photo Name:** Photo\_190724160057



## Additional Reference Data: Photos

HDR7520\_19

**Photo Name:** Photo\_190724160122



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/25/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7521_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>5</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u> Lat: <u>59.867809</u>	Long: <u>-155.296539</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>U</u>	

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center. This area is higher than (above) the rest of the mosaic polygon.</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>75</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Salix barclayi</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Salix pulchra</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Spiraea stevenii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	FACW species <u>9</u> x2= <u>18</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>118</u> x3= <u>354</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>46</u> x4= <u>184</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>32</u>				Column Totals: <u>173</u> (A) <u>556</u> (B)
50% of total cover: <u>16</u>				Prevalence Index = B/A= <u>3.21</u>
20% of total cover: <u>6.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Chamaenerion angustifolium</u>	<u>40</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Sanguisorba canadensis</u>	<u>7</u>	<u>No</u>	<u>FACW</u>	data in Remarks or on a separate sheet)
5. <u>Aconitum delphinifolium</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Rubus arcticus s.l.</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
7. <u>Pyrola grandiflora</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
8. <u>Geranium erianthum</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
9. <u>Angelica genuflexa</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	must be present, unless disturbed or problematic.
10. <u>Poa sp.</u>	<u>2</u>	<u>No</u>	<u>N/A</u>	
Total Cover: <u>143</u>				
50% of total cover: <u>71.5</u>				
20% of total cover: <u>28.6</u>				
Plot size (radius, or length x width) <u>20 X 20 feet</u>				
% Bare Ground <u>5</u>				
% Cover of Wetland Bryophytes <u>1</u> (Where applicable) % Cover of Bryophytes <sup>2</sup> <u>      </u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A		hor:Oi
4-6	7.5YR 3/2	100					No	Silt Loam	hor:A
6-11	10YR 4/3	80	5YR 4/4	20	C	PL	No	Silt Loam	hor:B1
11-16	7.5YR 4/4	100					No	Coarse Sand	hor:B2
16-22	10YR 4/3	80	7.5YR 4/4	20	C	PL	No	Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes    No    X
Type:    None	
Depth (inches):    N/A	
Field Drainage Class:    MWD - Moderately Well Drained	

Remarks: Dry to slightly moist throughout pit, but not saturated. Based on the fact that no saturation was observed down to 22 inches, dry season water table unlikely.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes    No    X
Surface Water Present?    Yes    No    X    Depth (inches):	
Water Table Present?    Yes    No    X    Depth (inches):	
Saturation Present?    Yes    No    X    Depth (inches): (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Based on the fact that no saturation was observed down to 22 inches, it is unlikely that a water table would occur within 24 inches. No primary or secondary hydrology indicators observed.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR7521\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Moehringia lateriflora	1	No	FACU
Trientalis europaea	1	No	FACU

Additional Reference Data: Photos

HDR7521\_19



Photo Name: Photo\_190724164756



Photo Name: Photo\_190724164738

## Additional Reference Data: Photos

HDR7521\_19



**Photo Name:** Photo\_190724164809



**Photo Name:** Photo\_190724164838



**Photo Name:** Photo\_190724164954

## Additional Reference Data: Photos

HDR7521\_19



**Photo Name:** Photo\_190724164929



Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	7/26/2019
Applicant/Owner:	PLP			Sampling Point:	HDR7538_19
Investigators:	MS, AH	Landform (hillslope, terrace, etc.):	Footslope		
Local Relief (concave, convex, none):	None	Slope(%):	3	HGM:	N/A
Subregion (LRR):	X	Lat:	59.788860	Long:	-154.891800
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If No, explain in Remarks)

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>      </u>	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>          </u>	No <u>      </u> X
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1.	Betula kenaica (tree)	15	Yes	FACU	Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)	
2.					Total Number of Dominant Species Across All Strata: 5 (B)	
3.					Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)	
4.						
Total Cover:		15				
50% of total cover:		7.5	20% of total cover:	3		
Sapling/Shrub Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index Worksheet:	
1.	Rhododendron tomentosum	80	Yes	FAC	Total % Cover of: Multiply by:	
2.	Vaccinium vitis-idaea	50	Yes	FAC	OBL species x1=	
3.	Betula kenaica	35	No	FACU	FACW species x2=	
4.	Salix pulchra	15	No	FAC	FAC species 163 x3= 489	
5.	Betula nana	5	No	FAC	FACU species 57 x4= 228	
6.	Salix glauca	5	No	FAC	UPL species 1 x5= 5	
Total Cover:		198			Column Totals: 221 (A) 722 (B)	
50% of total cover:		99	20% of total cover:	39.6	Prevalence Index = B/A= 3.27	
Herb Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:	
1.	Lupinus nootkatensis	5	Yes	FACU	Dominance Test is >50%	
2.	Chamaenerion angustifolium	2	Yes	FACU	Prevalence Index is ≤3.0	
3.	Hierochloe alpina	1	No	NL	Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)	
4.					Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
5.						
6.						
7.						
8.						
9.						
10.						
Total Cover:		8				
50% of total cover:		4	20% of total cover:	1.6		
Plot size (radius, or length x width) 1/10 acre			% Bare Ground	15		
% Cover of Wetland Bryophytes 0 (Where applicable)			% Cover of Bryophytes 30			
					Hydrophytic Vegetation Present? Yes No X	

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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A		hor:Oi
4-5	10YR 5/2	100					N/A	Very Fine Sandy	hor:C Ash
5-14	7.5YR 3/3	20					N/A	Sandy Loam	hor:B1 25 % gravel. 25% cobble.
5-14	10YR 4/6	80					N/A	Sandy Loam	hor:B1 25 % gravel. 25% cobble.
14-20	10YR 4/3	100					N/A	Loamy Sand	hor:B2 25 % gravel, 25% cobble.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Dry pit throughout; as such, alpha-alpha not tested.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Dry. No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7538\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Vaccinium uliginosum	5	No	FAC
Betula glandulosa	3	No	FAC

Additional Reference Data: Photos

HDR7538\_19



Photo Name: Photo\_190726112208



Photo Name: Photo\_190726112221



## Additional Reference Data: Photos

HDR7538\_19



**Photo Name:** Photo\_190726112155



**Photo Name:** Photo\_190726112141



**Photo Name:** Photo\_190726112228

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/26/2019  
 Applicant/Owner: PLP Sampling Point: HDR7540\_19  
 Investigators: MS, AH Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): Concave Slope(%): 2 HGM: Slope  
 Subregion (LRR): X Lat: 59.775192 Long: -154.895676 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS3/1B

Vegetation Type: Ericaceous Shrub Bog (ESB)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>15</u> <u>Multiply by:</u> <u>15</u>
2. <u>Rhododendron tomentosum</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	OBL species <u>15</u> x1= <u>15</u>
3. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>77</u> x2= <u>154</u>
4. <u>Salix pulchra</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>132</u> x3= <u>396</u>
5. <u>Vaccinium uliginosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACU species <u>7</u> x4= <u>28</u>
6. <u>Betula kenaica</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>120</u>				Column Totals: <u>231</u> (A) <u>593</u> (B)
50% of total cover: <u>60</u>				<u>Prevalence Index = B/A=</u> <u>2.57</u>
20% of total cover: <u>24</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Rubus chamaemorus</u>	<u>70</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Calamagrostis canadensis</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex bigelowii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Carex aquatilis</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Pedicularis labradorica</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
7. <u>Comarum palustre</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Drosera rotundifolia</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>111</u>				
50% of total cover: <u>55.5</u>				
20% of total cover: <u>22.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>100</u> % Cover of Bryophytes <u>100</u>				
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-7							N/A		hor:Oi
7-21							N/A		hor:Oe

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	VPD - Very Poorly Drained				

Remarks: H2S at 11".

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	12.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	9.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

H2S at 11".

Geomorphic Position: Swale



Additional Reference Data: Overflow Vegetation

HDR7540\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Myrica gale	4	No	OBL
Salix fuscescens	3	No	FACW
Salix glauca	2	No	FAC
Picea glauca	2	No	FACU
Andromeda polifolia	2	No	FACW
Vaccinium oxycoccos	2	No	OBL

Additional Reference Data: Photos

HDR7540\_19



Photo Name: Photo\_190726133846



Photo Name: Photo\_190726133834

## Additional Reference Data: Photos

HDR7540\_19



**Photo Name:** Photo\_190726133827

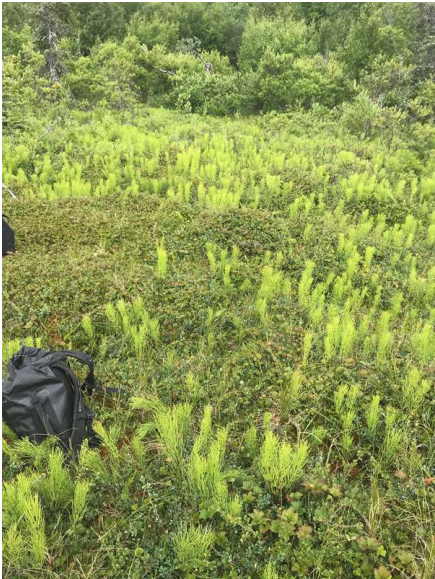


**Photo Name:** Photo\_190726133839



**Photo Name:** Photo\_190726133757

Photo Name: Photo\_190726133909





# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/26/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7543_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Valleybottom</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>2</u>	HGM: <u>Riverine</u>
Subregion (LRR): <u>X</u> Lat: <u>59.770836</u>	Long: <u>-154.894791</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1/EM1B</u>	

Vegetation Type: Broadleaf Woodland (BW)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If No, explain in Remarks)

Are Vegetation: ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation: ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Betula papyrifera s.l. (tree)</u>	7	Yes	FACU	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
2. <u>Picea glauca (tree)</u>	2	Yes	FACU	
3. <u> </u>				
4. <u> </u>				
Total Cover: <u>9</u>				<b>Prevalence Index Worksheet:</b> <u>Total % Cover of:</u> <u>Multiply by:</u> OBL species <u>22</u> x1= <u>22</u> FACW species <u>9</u> x2= <u>18</u> FAC species <u>68</u> x3= <u>204</u> FACU species <u>27</u> x4= <u>108</u> UPL species <u> </u> x5= <u> </u> Column Totals: <u>126</u> (A) <u>352</u> (B)
50% of total cover: <u>4.5</u>		20% of total cover: <u>1.8</u>		
<u>Sapling/Shrub Stratum</u>				
1. <u>Myrica gale</u>	20	Yes	OBL	Prevalence Index = B/A = <u>2.79</u>
2. <u>Betula papyrifera s.l.</u>	8	Yes	FACU	
3. <u>Salix glauca</u>	5	No	FAC	
4. <u>Salix pulchra</u>	5	No	FAC	
5. <u>Picea glauca</u>	5	No	FACU	
6. <u>Rhododendron tomentosum</u>	3	No	FAC	
Total Cover: <u>51</u>				<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% X Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
50% of total cover: <u>25.5</u>		20% of total cover: <u>10.2</u>		
<u>Herb Stratum</u>				
1. <u>Calamagrostis canadensis</u>	20	Yes	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Equisetum arvense</u>	15	Yes	FAC	
3. <u>Sanguisorba canadensis</u>	7	No	FACW	
4. <u>Equisetum sylvaticum</u>	5	No	FAC	
5. <u>Rubus arcticus s.l.</u>	5	No	FAC	
6. <u>Viola sp.</u>	3	No	N/A	
7. <u>Geranium erianthum</u>	2	No	FACU	
8. <u>Trientalis europaea</u>	2	No	FACU	
9. <u>Aconitum delphinifolium</u>	1	No	FAC	
10. <u>Athyrium cyclosum</u>	1	No	FAC	
Total Cover: <u>69</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
50% of total cover: <u>34.5</u>		20% of total cover: <u>13.8</u>		
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>10</u> (Where applicable)		% Cover of Bryophytes <u>15</u>		

Remarks:  
Bet pap shrubs greater than 10ft in height.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-8							N/A		hor:Oe
8-16	10YR 2/2	85					No	Silt Loam	hor:A *3
8-16	10YR 4/1	5					No	Silt Loam	hor:A *4
8-16	10YR 4/3	10					No	Silt Loam	hor:A *5
16-24							N/A		hor:Oe Buried

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b>	Yes	<u>  X  </u>	No	<u>          </u>
Type:	<u>  None  </u>					
Depth (inches):	<u>  N/A  </u>					
Field Drainage Class:	<u>  VPD - Very Poorly Drained  </u>					

Remarks: H2S at 9 inches. \*3: 10YR 4/3 and 4/1 are pockets of coarse sand. \*4: 10YR 4/3 and 4/1 are pockets of coarse sand. \*5: 10YR 4/3 and 4/1 are pockets of coarse sand.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> X	No	
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No <input type="checkbox"/>	Depth (inches):		9.0		
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No <input type="checkbox"/>	Depth (inches):		4.0		
(includes capillary fringe)							

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
H2S at 9 inches.

Geomorphic Position: Valleybottom

Additional Reference Data: Overflow Vegetation

HDR7543\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
Cornus suecica	1	No	FAC
Iris setosa	1	No	FAC
Polemonium acutiflorum	1	No	FAC
Gymnocarpium dryopteris	1	No	FACU
Angelica genuflexa	1	No	FACW
Galium trifidum	1	No	FACW
Carex utriculata	1	No	OBL
Comarum palustre	1	No	OBL
<b>Sapling/Shrub</b>			
Salix barclayi	3	No	FAC
Vaccinium vitis-idaea	2	No	FAC

Additional Reference Data: Photos

HDR7543\_19



Photo Name: Photo\_190726151229



Photo Name: Photo\_190726151257



## Additional Reference Data: Photos

HDR7543\_19



**Photo Name:** Photo\_190726151245



**Photo Name:** Photo\_190726151317



**Photo Name:** Photo\_190726151331

## Additional Reference Data: Photos

HDR7543\_19

Photo Name: Photo\_190726151203



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/27/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7546_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>2</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.765522</u>	Long: <u>-154.893967</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Dwarf Birch – Ericaceous Shrub Bog (ODBESB)</u>		NWI Classification: <u>PSS1/3B</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>9</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>9</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Rhododendron tomentosum</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>66</u> <u>Multiply by:</u>
2. <u>Betula nana</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>66</u> x1= <u>66</u>
3. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>30</u> x2= <u>60</u>
4. <u>Myrica gale</u>	<u>15</u>	<u>No</u>	<u>OBL</u>	FAC species <u>143</u> x3= <u>429</u>
5. <u>Vaccinium vitis-idaea</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>4</u> x4= <u>16</u>
6. <u>Andromeda polifolia</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>158</u>				Column Totals: <u>243</u> (A) <u>571</u> (B)
50% of total cover: <u>79</u>				<u>Prevalence Index = B/A=</u> <u>2.35</u>
20% of total cover: <u>31.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Eriophorum brachyantherum</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Rubus chamaemorus</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex aquatilis</u>	<u>10</u>	<u>Yes</u>	<u>OBL</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Carex canescens</u>	<u>10</u>	<u>Yes</u>	<u>OBL</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Carex rotundata</u>	<u>10</u>	<u>Yes</u>	<u>OBL</u>	
7. <u>Equisetum sylvaticum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Eriophorum russeolum s.l.</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	must be present, unless disturbed or problematic.
9. <u>Calamagrostis canadensis</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
10. <u>Chamaenerion angustifolium</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>85</u>				
50% of total cover: <u>42.5</u>				
20% of total cover: <u>17</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>60</u>				
% Cover of Bryophytes <u>80</u>				
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A		hor:Oi
4-12							N/A		hor:Oe
12-20	7.5YR 2.5/1	100					No	Silt Loam	hor:A *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks: \*3: 40% cobble. High organic content.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> X Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	14.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	11.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7546\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
Pedicularis labradorica	1	No	FACW
<b>Sapling/Shrub</b>			
Betula glandulosa	5	No	FAC
Salix pulchra	5	No	FAC
Salix fuscescens	4	No	FACW
Betula kenaica	2	No	FACU
Picea glauca	1	No	FACU
Vaccinium oxycoccos	1	No	OBL

Additional Reference Data: Photos

HDR7546\_19



Photo Name: Photo\_190726160842



Photo Name: Photo\_190726160820

## Additional Reference Data: Photos

HDR7546\_19



**Photo Name:** Photo\_190726160846



**Photo Name:** Photo\_190726160829



**Photo Name:** Photo\_190726160900



Photo Name: Photo\_190726160855



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/27/2019  
 Applicant/Owner: PLP Sampling Point: HDR7551\_19  
 Investigators: MS, AH Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): None Slope(%): 1 HGM: Slope  
 Subregion (LRR): X Lat: 59.885120 Long: -155.263611 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1/EM1C

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index Worksheet:</b>				
<u>Sapling/Shrub Stratum</u>				
1. <u>Salix pulchra</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by: <u>      </u>
2. <u>Betula nana</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	OBL species <u>10</u> x1= <u>10</u>
3. <u>Vaccinium uliginosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>75</u> x2= <u>150</u>
4. <u>Empetrum nigrum</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FAC species <u>58</u> x3= <u>174</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>4</u> x4= <u>16</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>40</u>				Column Totals: <u>147</u> (A) <u>350</u> (B)
50% of total cover: <u>20</u>				Prevalence Index = B/A= <u>2.38</u>
20% of total cover: <u>8</u>				
<u>Herb Stratum</u>				
1. <u>Carex saxatilis</u>	<u>65</u>	<u>Yes</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b>
2. <u>Calamagrostis canadensis</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	X Dominance Test is >50%
3. <u>Juncus filiformis</u>	<u>7</u>	<u>No</u>	<u>FACW</u>	X Prevalence Index is ≤3.0
4. <u>Equisetum arvense</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
5. <u>Carex rotundata</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	data in Remarks or on a separate sheet)
6. <u>Comarum palustre</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
7. <u>Sanguisorba canadensis</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. <u>Iris setosa</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
9. <u>Chamaenerion angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
10. <u>Viola sp.</u>	<u>2</u>	<u>No</u>	<u>N/A</u>	
Total Cover: <u>109</u>				
50% of total cover: <u>54.5</u>				
20% of total cover: <u>21.8</u>				
Plot size (radius, or length x width) <u>20 X 20 feet</u>				
% Bare Ground <u>25</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>0</u>				
(Where applicable)				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Remarks:  
Lichen 0%. Bare ground in low spots that appear to be inundated at times. Pond fringe.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-6							N/A		hor:Oi
6-10							N/A		hor:Oa
10-14	10YR 4/1	85	5YR 4/4	15	C	RC	N/A	Fine Sandy Loam	hor:C Ash
14-18							N/A		hor:Oa Buried
18-21	2.5Y 4/2	100					No	Silt Loam	hor:A
21-23	2.5Y 5/3	70	7.5YR 4/6	30	C	M	No	Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> X	Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)		Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)		Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)		Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> X	Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)				Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)				Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> X	FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	10.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	4.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Bare ground in low spots that appear to be inundated at times.

Geomorphic Position: Toeslope/ pond fringe.



Additional Reference Data: Overflow Vegetation

HDR7551\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Rubus arcticus s.l.	1	No	FAC
Geranium erianthum	1	No	FACU
Trientalis europaea	1	No	FACU

Additional Reference Data: Photos

HDR7551\_19



Photo Name: Photo\_190727083222



Photo Name: Photo\_190727083258

## Additional Reference Data: Photos

HDR7551\_19



**Photo Name:** Photo\_190727083308



**Photo Name:** Photo\_190727083144



**Photo Name:** Photo\_190727083319

Photo Name: Photo\_190727083251





# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/27/2019  
 Applicant/Owner: PLP Sampling Point: HDR7552\_19  
 Investigators: MS, AH Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): None Slope(%): 2 HGM: N/A  
 Subregion (LRR): X Lat: 59.885815 Long: -155.263580 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center. Pond edge. 1-2' drop into pond. Willows along edge of pond extend over pond edge 4-6'.			

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
<b>Tree Stratum</b>				Number of Dominant Species
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Percent of Dominant Species
Total Cover: <u>      </u>				That Are OBL, FACW, or FAC: <u>75</u> (A/B)
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		<b>Prevalence Index Worksheet:</b>
<b>Sapling/Shrub Stratum</b>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Salix barclayi</u>	50	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
2. <u>Salix pulchra</u>	20	Yes	FAC	FACW species <u>11</u> x2= <u>22</u>
3. <u>Viburnum edule</u>	6	No	FACU	FAC species <u>119</u> x3= <u>357</u>
4. <u>Spiraea stevenii</u>	4	No	FACU	FACU species <u>47</u> x4= <u>188</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>177</u> (A) <u>567</u> (B)
Total Cover: <u>80</u>				<b>Prevalence Index = B/A =</b> <u>3.20</u>
50% of total cover: <u>40</u>		20% of total cover: <u>16</u>		<b>Hydrophytic Vegetation Indicators:</b>
<b>Herb Stratum</b>				<u>X</u> Dominance Test is >50%
1. <u>Cornus suecica</u>	30	Yes	FAC	Prevalence Index is ≤3.0
2. <u>Chamaenerion angustifolium</u>	30	Yes	FACU	Morphological Adaptations <sup>1</sup> (Provide
3. <u>Calamagrostis canadensis</u>	15	No	FAC	data in Remarks or on a separate sheet)
4. <u>Sanguisorba canadensis</u>	10	No	FACW	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>Geranium erianthum</u>	7	No	FACU	
6. <u>Iris setosa</u>	2	No	FAC	
7. <u>Viola sp.</u>	2	No	N/A	
8. <u>Aconitum delphinifolium</u>	1	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology
9. <u>Rubus arcticus s.l.</u>	1	No	FAC	must be present, unless disturbed or problematic.
10. <u>Galium trifidum</u>	1	No	FACW	
Total Cover: <u>99</u>				
50% of total cover: <u>49.5</u>		20% of total cover: <u>19.8</u>		
Plot size (radius, or length x width) <u>20 X 20 feet</u>		% Bare Ground <u>15</u>		
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>0</u>		
(Where applicable)				
Remarks: Borderline CWLS.				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-4							N/A		hor:Oa
4-7	10YR 2/2	100					N/A	Sandy Loam	hor:A 25% cobble/gravel
7-20	10YR 2/2	100					N/A	Loamy Sand	hor:B/C 25% cobble, 25% gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Dry throughout soil profile; as such, alpha-alpha not tested.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:

## Additional Reference Data: Photos

HDR7552\_19



**Photo Name:** Photo\_190727092839



**Photo Name:** Photo\_190727092921



**Photo Name:** Photo\_190727093052





**Photo Name:** Photo\_190727092907



**Photo Name:** Photo\_190727093026



**Photo Name:** Photo\_190727092933

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/27/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7553_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>5</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.885307</u>	Long: <u>-155.267776</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
NW1 Classification: <u>U</u>		

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If No, explain in Remarks)

Are Vegetation: Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation: Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		<b>Is the Sampled Area within a Wetland?</b>  Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<b>Sapling/Shrub Stratum</b>				
1. <u>Empetrum nigrum</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Vaccinium uliginosum</u>	<u>25</u>	<u>No</u>	<u>FAC</u>	
3. <u>Betula nana</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	
4. <u>Spiraea stevenii</u>	<u>12</u>	<u>No</u>	<u>FACU</u>	
5. <u>Rhododendron tomentosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
6. <u>Salix pulchra</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>137</u>				
50% of total cover: <u>68.5</u>		20% of total cover: <u>27.4</u>		
<b>Herb Stratum</b>				
1. <u>Carex bigelowii</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Cornus suecica</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Calamagrostis canadensis</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
4. <u>Lycopodium annotinum s.l.</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
Total Cover: <u>17</u>				
50% of total cover: <u>8.5</u>		20% of total cover: <u>3.4</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>5</u>		
% Cover of Wetland Bryophytes <u>0</u>	% Cover of Bryophytes <u>25</u>			
(Where applicable)				

**Dominance Test Worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index Worksheet:**

Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_

OBL species        x1= \_\_\_\_\_

FACW species        x2= \_\_\_\_\_

FAC species 141 x3= 423

FACU species 13 x4= 52

UPL species        x5= \_\_\_\_\_

Column Totals: 154 (A) 475 (B)

Prevalence Index = B/A= 3.08

**Hydrophytic Vegetation Indicators:**

X Dominance Test is >50%

Prevalence Index is ≤3.0

Morphological Adaptations<sup>1</sup> (Provide data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ☒ No ☐

Remarks: Emp nig and moss at hummock depressions.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oe
2-9	10YR 2/2	100						Silt Loam	hor:A 10% gravel, 10% cobble
9-20	10YR 2/2	100						Sandy Loam	hor:B/C 20% gravel, 5% cobble.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: Pit dug at hummock midpoint. Dry throughout.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Saturation Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
(includes capillary fringe)									
					<b>Wetland Hydrology Present?</b>	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:



## Additional Reference Data: Photos

HDR7553\_19



**Photo Name:** Photo\_190727100700



**Photo Name:** Photo\_190727100645



**Photo Name:** Photo\_190727100653

## Additional Reference Data: Photos

HDR7553\_19



**Photo Name:** Photo\_190727100635



**Photo Name:** Photo\_190727100707



**Photo Name:** Photo\_190727100714

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/27/2019  
 Applicant/Owner: PLP Sampling Point: HDR7555\_19  
 Investigators: MS, AH Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): None Slope(%): 1 HGM: N/A  
 Subregion (LRR): X Lat: 59.883492 Long: -155.266205 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>7</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>57</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index Worksheet:</b>				
Total % Cover of:		Multiply by:		
OBL species	<u>      </u>	x1=	<u>      </u>	
FACW species	<u>13</u>	x2=	<u>26</u>	
FAC species	<u>124</u>	x3=	<u>372</u>	
FACU species	<u>51</u>	x4=	<u>204</u>	
UPL species	<u>      </u>	x5=	<u>      </u>	
Column Totals:	<u>188</u> (A)		<u>602</u> (B)	
Prevalence Index = B/A=				<u>3.20</u>
<b>Hydrophytic Vegetation Indicators:</b>				
X Dominance Test is >50%				
Prevalence Index is ≤3.0				
Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)				
Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix glauca</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Salix pulchra</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>90</u>				
50% of total cover: <u>45</u>				
20% of total cover: <u>18</u>				

Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Calamagrostis canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Angelica lucida</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Chamaenerion angustifolium</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	
4. <u>Heracleum maximum</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	
5. <u>Petasites frigidus s.l.</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	
6. <u>Sedum rosea ssp. integrifolium</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
7. <u>Lupinus nootkatensis</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
8. <u>Solidago multiradiata</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
9. <u>Aconitum delphinifolium</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
10. <u>Rubus arcticus s.l.</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>101</u>				
50% of total cover: <u>50.5</u>				
20% of total cover: <u>20.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				% Bare Ground <u>10</u>
% Cover of Wetland Bryophytes <u>0</u>				% Cover of Bryophytes <u>0</u>
(Where applicable)				

Remarks:  
Lichen 0%. Moderate to large hummocks



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-6	7.5YR 3/2	100					N/A	Sandy Loam	hor:A
6-20	10YR 2/2	100					N/A	Sandy Loam	hor:B 30% gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
Type:   None	
Depth (inches):    N/A	
Field Drainage Class:   WD - Well Drained	

Remarks: Dry throughout profile; as such, alpha alpha not tested.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X    Depth (inches):	
Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X    Depth (inches):	
Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X    Depth (inches): (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7555\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Achillea millefolium s.l.	3	No	FACU
Geranium erianthum	3	No	FACU
Trientalis europaea	3	No	FACU
Sanquisorba canadensis	3	No	FACW
Viola sp.	3	No	N/A
Equisetum sylvaticum	2	No	FAC
Pyrola asarifolia	2	No	FACU
Equisetum arvense	1	No	FAC

Additional Reference Data: Photos

HDR7555\_19



Photo Name: Photo\_190727112923



Photo Name: Photo\_190727113002

## Additional Reference Data: Photos

HDR7555\_19



**Photo Name:** Photo\_190727113015



**Photo Name:** Photo\_190727112945



**Photo Name:** Photo\_190727113020



## Additional Reference Data: Photos

HDR7555\_19

**Photo Name:** Photo\_190727113027



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/27/2019  
 Applicant/Owner: PLP Sampling Point: HDR7556\_19  
 Investigators: MS, AH Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): None Slope(%): 0 HGM: Slope  
 Subregion (LRR): X Lat: 59.938354 Long: -155.356995 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS3/1B

Vegetation Type: Ericaceous Shrub Bog (ESB)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index Worksheet:</b>				
<u>Sapling/Shrub Stratum</u>				
1. <u>Empetrum nigrum</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by: <u>      </u>
2. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>19</u> x1= <u>19</u>
3. <u>Vaccinium vitis-idaea</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACW species <u>24</u> x2= <u>48</u>
4. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>110</u> x3= <u>330</u>
5. <u>Salix fuscescens</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>Rhododendron tomentosum</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>92</u>				Column Totals: <u>153</u> (A) <u>397</u> (B)
50% of total cover: <u>46</u>				Prevalence Index = B/A= <u>2.59</u>
20% of total cover: <u>18.4</u>				
<u>Herb Stratum</u>				
1. <u>Equisetum arvense</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b>
2. <u>Rubus chamaemorus</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	X Dominance Test is >50%
3. <u>Carex aquatilis</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>	X Prevalence Index is ≤3.0
4. <u>carex biglowii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
5. <u>Calamagrostis canadensis</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
6. <u>Petasites frigidus s.l.</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
7. <u>Cornus suecica</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. <u>Comarum palustre</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	
9. <u>Pedicularis labradorica</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
Total Cover: <u>61</u>				
50% of total cover: <u>30.5</u>				
20% of total cover: <u>12.2</u>				
Plot size (radius, or length x width) <u>10 X 10 feet</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>90</u>		% Cover of Bryophytes <u>90</u>		
(Where applicable)				

Remarks:  
Lichen 2%.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A		hor:Oi
4-20							N/A		hor:Oe

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	VPD - Very Poorly Drained				

Remarks: H2S @ 12 inches.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	12.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	4.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
H2S at 12 inches.

Geomorphic Position: Edge of pond.



Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Salix pulchra	2	No	FAC
Vaccinium oxycoccos	2	No	OBL

Additional Reference Data: Photos

HDR7556\_19



Photo Name: Photo\_190727132551



Photo Name: Photo\_190727132531

## Additional Reference Data: Photos

HDR7556\_19



**Photo Name:** Photo\_190727132542



**Photo Name:** Photo\_190727132524



**Photo Name:** Photo\_190727132537

## Additional Reference Data: Photos

HDR7556\_19

Photo Name: Photo\_190727132509





# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/27/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7557_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>3</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.938606</u>	Long: <u>-155.356140</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>9</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>56</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Salix barclayi</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>2</u> <u>Multiply by:</u> <u>2</u>
2. <u>Salix pulchra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>2</u> x1= <u>2</u>
3. <u>Vaccinium uliginosum</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	FACW species <u>5</u> x2= <u>10</u>
4. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>98</u> x3= <u>294</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>25</u> x4= <u>100</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>72</u>				Column Totals: <u>130</u> (A) <u>406</u> (B)
50% of total cover: <u>36</u>				<u>Prevalence Index = B/A=</u> <u>3.12</u>
20% of total cover: <u>14.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Prevalence Index is ≤3.0
3. <u>Chamaenerion angustifolium</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Angelica lucida</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Geranium erianthum</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>	
7. <u>Viola sp.</u>	<u>5</u>	<u>Yes</u>	<u>N/A</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Rubus arcticus s.l.</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Sedum rosea ssp. integrifolium</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
10. <u>Achillea millefolium s.l.</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>63</u>				
50% of total cover: <u>31.5</u>				
20% of total cover: <u>12.6</u>				
Plot size (radius, or length x width) <u>15 X 30 feet</u>				
% Bare Ground <u>10</u>				
% Cover of Wetland Bryophytes <u>5</u>		% Cover of Bryophytes <u>20</u>		
(Where applicable)				
Remarks:				
Bare ground is litter. Lichen 1%.				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-6							N/A		hor:Oe Lots of large roots
6-15	7.5YR 2.5/1	100					No	Sandy Loam	hor:A 40% cobble
15-20	10YR 3/4	100					No	Sandy Loam	hor:B 40% cobble. 20% gravel.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type:	None	
Depth (inches):	N/A	
Field Drainage Class:	MWD - Moderately Well Drained	

Remarks: Moist starting at 10 inches. No saturation to 24 inches.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7557\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Comarum palustre	2	No	OBL
Aconitum delphiniifolium	1	No	FAC
Anemone richardsonii	1	No	FAC
Moehringia lateriflora	1	No	FACU
Pyrola asarifolia	1	No	FACU
Solidago multiradiata	1	No	FACU

Additional Reference Data: Photos

HDR7557\_19



Photo Name: Photo\_190727142302



Photo Name: Photo\_190727142254



## Additional Reference Data: Photos

HDR7557\_19



**Photo Name:** Photo\_190727142335



**Photo Name:** Photo\_190727142228



**Photo Name:** Photo\_190727142309

Photo Name: Photo\_190727142317



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/27/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7559_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Hillside</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>28</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.933167</u>	Long: <u>-155.332550</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Alder Tall Shrub (OATS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		That Are OBL, FACW, or FAC: <u>100</u> (A/B)
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index Worksheet:</b>
1. <u>Alnus sinuata</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by: <u>      </u>
2. <u>Spiraea stevenii</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix pulchra</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>Vaccinium uliginosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>125</u> x3= <u>375</u>
5. <u>Linnaea borealis</u>	<u>2</u>	<u>No</u>	<u>UPL</u>	FACU species <u>29</u> x4= <u>116</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>2</u> x5= <u>10</u>
Total Cover: <u>92</u>				Column Totals: <u>156</u> (A) <u>501</u> (B)
50% of total cover: <u>46</u>		20% of total cover: <u>18.4</u>		<b>Prevalence Index = B/A =</b> <u>3.21</u>
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Rubus arcticus s.l.</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Dryopteris expansa</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Cornus suecica</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Trientalis europaea</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Gymnocarpium dryopteris</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
7. <u>Lycopodium annotinum s.l.</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>64</u>				
50% of total cover: <u>32</u>		20% of total cover: <u>12.8</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>10</u>		<b>Hydrophytic</b>
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>0</u>		<b>Vegetation</b>
(Where applicable)				Yes <u>X</u> No <u>      </u>
				<b>Present?</b>

Remarks:  
Steep slope down to pond. Lichen 0%.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-2							N/A	Very Fine Sandy	hor:C Ash
2-8	10YR 3/4	5					N/A	Sandy Loam	hor:A *3
2-8	5YR 2.5/2	80					N/A	Sandy Loam	hor:A *4
2-8	5YR 3/4	15					N/A	Sandy Loam	hor:A *5
8-20	10YR 3/4	100					N/A	Sandy Loam	hor:B *6

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: Dry throughout soil profile. Cobble layer starting at 20 inches. Steep slope. Well drained. \*3: With some small patches of dark organic staining. \*4: With some small patches of dark organic staining. \*5: With some small patches of dark organic staining. \*6: 5% gravel, 20% cobble. Cobbles below 20".

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Microtopographic Relief (D4)
	<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Steep slope drains rapidly. No primary or secondary hydrology indicators observed.

Geomorphic Position:

## Additional Reference Data: Photos

HDR7559\_19



**Photo Name:** Photo\_190727154059



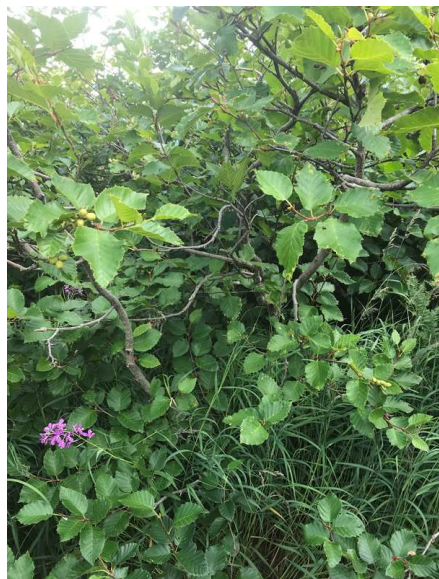
**Photo Name:** Photo\_190727153954



**Photo Name:** Photo\_190727154113

## Additional Reference Data: Photos

HDR7559\_19



**Photo Name:** Photo\_190727154105



**Photo Name:** Photo\_190727154109



**Photo Name:** Photo\_190727154023



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/28/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7561_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Bench</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>5</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.880539</u>	Long: <u>-155.319107</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
NW1 Classification: <u>PSS1/EM1C</u>		

Vegetation Type: Subarctic Sedge – Moss Wet Meadow (SSMWM)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b> <u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u> OBL species <u>85</u> x1= <u>85</u> FACW species <u>39</u> x2= <u>78</u> FAC species <u>61</u> x3= <u>183</u> FACU species <u>6</u> x4= <u>24</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>191</u> (A) <u>370</u> (B)  <i>Prevalence Index = B/A=</i> <u>1.94</u>
1. <u>Salix fuscescens</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Betula nana</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Salix pulchra</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	
4. <u>Spiraea stevenii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
5. <u>Alnus sinuata</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>40</u>				
50% of total cover: <u>20</u>		20% of total cover: <u>8</u>		
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% X Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
1. <u>Comarum palustre</u>	<u>40</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Eriophorum angustifolium</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>	
3. <u>Calamagrostis canadensis</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Equisetum arvense</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	
5. <u>Eriophorum scheuchzeri</u>	<u>15</u>	<u>No</u>	<u>OBL</u>	
6. <u>Epilobium hornemannii</u>	<u>7</u>	<u>No</u>	<u>FACW</u>	
7. <u>Juncus castaneus</u>	<u>7</u>	<u>No</u>	<u>FACW</u>	
8. <u>Sedum rosea ssp. integrifolium</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
9. <u>Chamaenerion angustifolium</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
10. <u>Rumex arcticus</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	
Total Cover: <u>152</u>				
50% of total cover: <u>76</u>		20% of total cover: <u>30.4</u>		
Plot size (radius, or length x width) <u>25 X 25 feet</u>		% Bare Ground <u>2</u>		
% Cover of Wetland Bryophytes <u>20</u>		% Cover of Bryophytes <u>30</u>		
(Where applicable)				
Remarks:				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
Lichen 1%				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-10							N/A		hor:Oi H2S at 2".
10-20							N/A		hor:Oe

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	VPD - Very Poorly Drained				

Remarks: H2S at 2". Cobbles starting at 18" (40%).

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input checked="" type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	3.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	3.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	0.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
H2S at 2". Iron sheen on surface water.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7561\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Sanquisorba canadensis	2	No	FACW
Moehringia lateriflora	1	No	FACU
Viola sp.	1	No	N/A

Additional Reference Data: Photos

HDR7561\_19

Photo Name: Photo\_190728091232



Photo Name: Photo\_190728091249





## Additional Reference Data: Photos

HDR7561\_19



**Photo Name:** Photo\_190728091237



**Photo Name:** Photo\_190728091244



**Photo Name:** Photo\_190728091223

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/28/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7562_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Hillside</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>25</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u> Lat: <u>59.880733</u>	Long: <u>-155.319641</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>U</u>	

Vegetation Type: Bluejoint Herb (BH)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>      </u> No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>      </u> Multiply by: OBL species <u>      </u> x1= <u>      </u> FACW species <u>10</u> x2= <u>20</u> FAC species <u>97</u> x3= <u>291</u> FACU species <u>60</u> x4= <u>240</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>167</u> (A) <u>551</u> (B)  Prevalence Index = B/A= <u>3.30</u>
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<b>Sapling/Shrub Stratum</b>				
1. <u>Spiraea stevenii</u>	15	Yes	FACU	
2. <u>Alnus sinuata</u>	2	No	FAC	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>17</u>				<b>Hydrophytic Vegetation Indicators:</b> Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover: <u>8.5</u>		20% of total cover: <u>3.4</u>		
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	75	Yes	FAC	
2. <u>Chamaenerion angustifolium</u>	25	Yes	FACU	
3. <u>Dryopteris expansa</u>	15	No	FACU	
4. <u>Veratrum viride</u>	10	No	FAC	
5. <u>Sanguisorba canadensis</u>	10	No	FACW	
6. <u>Equisetum arvense</u>	7	No	FAC	
7. <u>Thelypteris phegopteris</u>	5	No	FACU	
8. <u>Rubus arcticus s.l.</u>	3	No	FAC	
9. <u>Viola sp.</u>	2	No	N/A	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>152</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>      </u> No <u>      </u> X <u>      </u>
50% of total cover: <u>76</u>		20% of total cover: <u>30.4</u>		
Plot size (radius, or length x width) <u>10 X 20 feet</u> % Bare Ground <u>2</u>				
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <sup>1</sup> <u>      </u>		
(Where applicable)				

Remarks: Lichen 1%.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A		hor:Oi
5-9	7.5YR 2.5/2	100					N/A	Silt Loam	hor:A
9-18	7.5YR 2.5/3	100					N/A	Sandy Loam	hor:B1 10% gravel and 10% cobbles.
18-22	10YR 3/4	100					N/A	Sandy Loam	hor:B2 30% gravel and 10% cobbles.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Dry throughout profile; as such, alpha-alpha not tested. Steep slope. Well drained.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

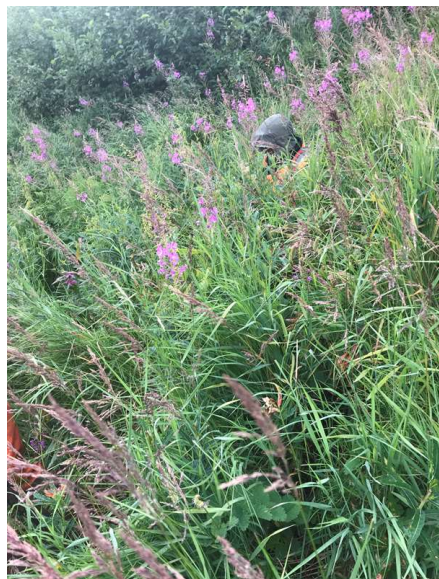
Remarks:  
No primary or secondary indicators observed.

Geomorphic Position:



## Additional Reference Data: Photos

HDR7562\_19



**Photo Name:** Photo\_190728093422



**Photo Name:** Photo\_190728093316



**Photo Name:** Photo\_190728093402



## Additional Reference Data: Photos

HDR7562\_19



**Photo Name:** Photo\_190728093340



**Photo Name:** Photo\_190728093417



**Photo Name:** Photo\_190728093433

Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	7/28/2019
Applicant/Owner:	PLP			Sampling Point:	HDR7564_19
Investigators:	MS, AH	Landform (hillslope, terrace, etc.):	Hillside		
Local Relief (concave, convex, none):	None	Slope(%):	10	HGM:	N/A
Subregion (LRR):	X	Lat:	59.888565	Long:	-155.362350
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-9	10YR 2/2	100					N/A	Silt Loam	hor:A
9-10							N/A		hor:Oa Buried organic.
10-13	10YR 2/2	100					Yes	Silt Loam	hor:A
13-18	10YR 3/1	88	2.5YR 2.5/4	2	C	PL	Yes	Silt Loam	hor:B1 10% cobbles
13-18			5YR 3/4	10	C	PL	Yes	Silt Loam	hor:B1 10% cobbles
18-24	10YR 3/1	80	5YR 4/4	20	C	M	Yes	Silt Loam	hor:B2 10% cobbles

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Redox (A14)		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: SPD - Somewhat Poorly Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: Moist throughout but not saturated. Too dry in upper layers to test alpha-alpha. Pit dug 5' away from stream. Stream likely influences some of the soil profile.

HYDROLOGY

<b>Wetland Hydrology Indicators:</b>	<b>Secondary Indicators (2 or more required)</b>
Primary Indicators (minimum of one required; check all that apply)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary hydrology indicators observed. Stream runs through polygon, but is not included within plot. Stream characteristics are described at stream point 7563. No surface water in the 1/10 acre around point except for the stream. Plot located on 10% slope.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7564\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Anemone richardsonii	1	No	FAC
Sedum rosea ssp. integrifolium	1	No	FAC
Streptopus amplexifolius	1	No	FAC
Angelica lucida	1	No	FACU
Heracleum maximum	1	No	FACU
Poa sp.	1	No	N/A

Additional Reference Data: Photos

HDR7564\_19



Photo Name: Photo\_190728111538



Photo Name: Photo\_190728111513

## Additional Reference Data: Photos

HDR7564\_19



**Photo Name:** Photo\_190728111601



**Photo Name:** Photo\_190728111532



**Photo Name:** Photo\_190728111554



## Additional Reference Data: Photos

HDR7564\_19

**Photo Name:** Photo\_190728111546



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/28/2019  
 Applicant/Owner: PLP Sampling Point: HDR7565\_19  
 Investigators: MS, AH Landform (hillslope, terrace, etc.): Hillside  
 Local Relief (concave, convex, none): None Slope(%): 15 HGM: N/A  
 Subregion (LRR): X Lat: 59.887547 Long: -155.362915 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index Worksheet:</b>				
Total % Cover of:		Multiply by:		
OBL species	<u>      </u>	x1=	<u>      </u>	
FACW species	<u>5</u>	x2=	<u>10</u>	
FAC species	<u>157</u>	x3=	<u>471</u>	
FACU species	<u>31</u>	x4=	<u>124</u>	
UPL species	<u>      </u>	x5=	<u>      </u>	
Column Totals:	<u>193</u> (A)		<u>605</u> (B)	
Prevalence Index = B/A=				<u>3.13</u>
<b>Hydrophytic Vegetation Indicators:</b>				
X Dominance Test is >50%				
Prevalence Index is ≤3.0				
Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)				
Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix pulchra</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>80</u>				
50% of total cover: <u>40</u>				
20% of total cover: <u>16</u>				

Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Calamagrostis canadensis</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Equisetum arvense</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Athyrium cyclosum</u>	<u>12</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Gymnocarpium dryopteris</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
5. <u>Heracleum maximum</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
6. <u>Veratrum viride</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	
7. <u>Chamaenerion angustifolium</u>	<u>7</u>	<u>No</u>	<u>FACU</u>	
8. <u>Anemone richardsonii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
9. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
10. <u>Angelica lucida</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>113</u>				
50% of total cover: <u>56.5</u>				
20% of total cover: <u>22.6</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				% Bare Ground <u>20</u>
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>40</u>		
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oe
1-6	10YR 2/1	60					N/A	Silt Loam	hor:A
1-6	10YR 3/1	40					N/A	Silt Loam	hor:A
6-22	10YR 3/3	100					N/A	Silt Loam	hor:B 15% cobble, 10% gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Dry throughout soil profile; as such, alpha-alpha not tested. Well drained slope.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR7565\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Pyrola asarifolia	2	No	FACU
Aconitum delphiniifolium	1	No	FAC
Streptopus amplexifolius	1	No	FAC

Additional Reference Data: Photos

HDR7565\_19



Photo Name: Photo\_190728122025



Photo Name: Photo\_190728122017

## Additional Reference Data: Photos

HDR7565\_19



**Photo Name:** Photo\_190728122000



**Photo Name:** Photo\_190728121911



**Photo Name:** Photo\_190728122010

## Additional Reference Data: Photos

HDR7565\_19

Photo Name: Photo\_190728121932





Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	7/29/2019
Applicant/Owner:	PLP			Sampling Point:	HDR7566_19
Investigators:	MS, AH	Landform (hillslope, terrace, etc.):	Hillside		
Local Relief (concave, convex, none):	None	Slope(%):	10	HGM:	N/A
Subregion (LRR):	X	Lat:	59.860355	Long:	-154.864151
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-4	7.5YR 3/3	100					N/A	Sandy Loam	hor:A
4-11	10YR 4/4	100					N/A	Sandy Loam	hor:B1 10% gravels
11-20	10YR 4/3	100					N/A	Sandy Loam	hor:B2 15% gravels

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type: None			
Depth (inches): N/A			
Field Drainage Class: WD - Well Drained			
	<b>Hydric Soil Present?</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Dry throughout soil profile; as such, alpha-alpha not tested.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/>	Depth (inches):		
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/>	Depth (inches):		
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/>	Depth (inches):		
(includes capillary fringe)			
	<b>Wetland Hydrology Present?</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Slope drains rapidly. No primary or secondary hydrology indicators observed.

Geomorphic Position:

## Additional Reference Data: Overflow Vegetation

HDR7566\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Vaccinium vitis-idaea	10	No	FAC
Salix glauca	7	No	FAC
Picea glauca	5	No	FACU
Salix pulchra	3	No	FAC
Betula kenaica	3	No	FACU
Spiraea stevenii	3	No	FACU

## Additional Reference Data: Photos

HDR7566\_19



Photo Name: Photo\_190729090105



Photo Name: Photo\_190729090031



## Additional Reference Data: Photos

HDR7566\_19



**Photo Name:** Photo\_190729090044



**Photo Name:** Photo\_190729090053



**Photo Name:** Photo\_190729090113

Photo Name: Photo\_190729090058



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/29/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7567_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Hillside</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>10</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.859493</u>	Long: <u>-154.864029</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
		NWI Classification: <u>U</u>

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	
Hydric Soil Present? Yes <u>      </u> No <u>X</u>		
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>		Yes <u>      </u> No <u>X</u>
Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status																																																					
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>																																																					
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>																																																					
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Total Cover: <u>      </u>																																																								
50% of total cover: <u>0</u>				20% of total cover: <u>0</u>																																																				
<div style="display: flex; justify-content: space-between;"> <div> <b>Sapling/Shrub Stratum</b> <table style="width: 100%; border-collapse: collapse;"> <tr><td>1. <u>Salix pulchra</u></td><td style="text-align: center;">45</td><td style="text-align: center;">Yes</td><td style="text-align: center;">FAC</td></tr> <tr><td>2. <u>Betula nana</u></td><td style="text-align: center;">30</td><td style="text-align: center;">Yes</td><td style="text-align: center;">FAC</td></tr> <tr><td>3. <u>Vaccinium vitis-idaea</u></td><td style="text-align: center;">20</td><td style="text-align: center;">No</td><td style="text-align: center;">FAC</td></tr> <tr><td>4. <u>Rhododendron tomentosum</u></td><td style="text-align: center;">5</td><td style="text-align: center;">No</td><td style="text-align: center;">FAC</td></tr> <tr><td>5. <u>Vaccinium uliginosum</u></td><td style="text-align: center;">5</td><td style="text-align: center;">No</td><td style="text-align: center;">FAC</td></tr> <tr><td>6. <u>Picea glauca</u></td><td style="text-align: center;">2</td><td style="text-align: center;">No</td><td style="text-align: center;">FACU</td></tr> <tr><td colspan="4" style="text-align: right;">Total Cover: <u>111</u></td></tr> <tr><td colspan="4" style="text-align: right;">50% of total cover: <u>55.5</u></td></tr> <tr><td colspan="4" style="text-align: right;">20% of total cover: <u>22.2</u></td></tr> </table> </div> <div> <b>Dominance Test Worksheet:</b>            Number of Dominant Species            That Are OBL, FACW, or FAC: <u>3</u> (A)            Total Number of Dominant            Species Across All Strata: <u>4</u> (B)            Percent of Dominant Species            That Are OBL, FACW, or FAC: <u>75</u> (A/B)         </div> </div>					1. <u>Salix pulchra</u>	45	Yes	FAC	2. <u>Betula nana</u>	30	Yes	FAC	3. <u>Vaccinium vitis-idaea</u>	20	No	FAC	4. <u>Rhododendron tomentosum</u>	5	No	FAC	5. <u>Vaccinium uliginosum</u>	5	No	FAC	6. <u>Picea glauca</u>	2	No	FACU	Total Cover: <u>111</u>				50% of total cover: <u>55.5</u>				20% of total cover: <u>22.2</u>																			
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<div style="display: flex; justify-content: space-between;"> <div> <b>Herb Stratum</b> <table style="width: 100%; border-collapse: collapse;"> <tr><td>1. <u>Calamagrostis canadensis</u></td><td style="text-align: center;">10</td><td style="text-align: center;">Yes</td><td style="text-align: center;">FAC</td></tr> <tr><td>2. <u>Chamaenerion angustifolium</u></td><td style="text-align: center;">5</td><td style="text-align: center;">Yes</td><td style="text-align: center;">FACU</td></tr> <tr><td>3. <u>Carex bigelowii</u></td><td style="text-align: center;">2</td><td style="text-align: center;">No</td><td style="text-align: center;">FAC</td></tr> <tr><td>4. <u>Carex brunnescens</u></td><td style="text-align: center;">1</td><td style="text-align: center;">No</td><td style="text-align: center;">FAC</td></tr> <tr><td>5. <u>Rubus arcticus s.l.</u></td><td style="text-align: center;">1</td><td style="text-align: center;">No</td><td style="text-align: center;">FAC</td></tr> <tr><td>6. <u>Trientalis europaea</u></td><td style="text-align: center;">1</td><td style="text-align: center;">No</td><td style="text-align: center;">FACU</td></tr> <tr><td>7. <u>Carex macrochaeta</u></td><td style="text-align: center;">1</td><td style="text-align: center;">No</td><td style="text-align: center;">FACW</td></tr> <tr><td>8. <u>Sanguisorba canadensis</u></td><td style="text-align: center;">1</td><td style="text-align: center;">No</td><td style="text-align: center;">FACW</td></tr> <tr><td>9. <u>Artemisia arctica</u></td><td style="text-align: center;">1</td><td style="text-align: center;">No</td><td style="text-align: center;">NL</td></tr> <tr><td>10. <u>      </u></td><td><u>      </u></td><td><u>      </u></td><td><u>      </u></td></tr> <tr><td colspan="4" style="text-align: right;">Total Cover: <u>23</u></td></tr> <tr><td colspan="4" style="text-align: right;">50% of total cover: <u>11.5</u></td></tr> <tr><td colspan="4" style="text-align: right;">20% of total cover: <u>4.6</u></td></tr> </table> </div> <div> <b>Prevalence Index Worksheet:</b>            Total % Cover of: <u>      </u> Multiply by:            OBL species <u>      </u> x1= <u>      </u>            FACW species <u>2</u> x2= <u>4</u>            FAC species <u>119</u> x3= <u>357</u>            FACU species <u>12</u> x4= <u>48</u>            UPL species <u>1</u> x5= <u>5</u>            Column Totals: <u>134</u> (A) <u>414</u> (B)              Prevalence Index = B/A= <u>3.09</u> </div> </div>					1. <u>Calamagrostis canadensis</u>	10	Yes	FAC	2. <u>Chamaenerion angustifolium</u>	5	Yes	FACU	3. <u>Carex bigelowii</u>	2	No	FAC	4. <u>Carex brunnescens</u>	1	No	FAC	5. <u>Rubus arcticus s.l.</u>	1	No	FAC	6. <u>Trientalis europaea</u>	1	No	FACU	7. <u>Carex macrochaeta</u>	1	No	FACW	8. <u>Sanguisorba canadensis</u>	1	No	FACW	9. <u>Artemisia arctica</u>	1	No	NL	10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Cover: <u>23</u>				50% of total cover: <u>11.5</u>				20% of total cover: <u>4.6</u>			
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<div style="display: flex; justify-content: space-between;"> <div>           Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>2</u>            % Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>70</u>            (Where applicable)         </div> <div> <b>Hydrophytic Vegetation Indicators:</b>            X Dominance Test is &gt;50%            Prevalence Index is ≤3.0            Morphological Adaptations<sup>1</sup> (Provide                data in Remarks or on a separate sheet)            Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)    <sup>1</sup>Indicators of hydric soil and wetland hydrology            must be present, unless disturbed or problematic.         </div> </div>																																																								
<div style="display: flex; justify-content: space-between;"> <div>           Remarks:            Lichen 7%. Salpul is dwarf.         </div> <div> <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u> </div> </div>																																																								



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1							N/A		hor:Oi
1-2							N/A		hor:Oe
2-14	7.5YR 2.5/1	45					N/A	Sandy Loam	hor:A
2-14	7.5YR 2.5/2	10					N/A	Sandy Loam	hor:A
2-14	7.5YR 2.5/3	45					N/A	Sandy Loam	hor:A
14-24	7.5YR 2.5/3	50					N/A	Sandy Loam	hor:A/B
14-24	7.5YR 3/3	50					N/A	Sandy Loam	hor:A/B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Remarks: Dry throughout profile; as such, alpha-alpha not tested.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches):	
Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches):	
Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7567\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Populus tremuloides	2	No	FACU
Spiraea stevenii	2	No	FACU

Additional Reference Data: Photos

HDR7567\_19



Photo Name: Photo\_190729094758



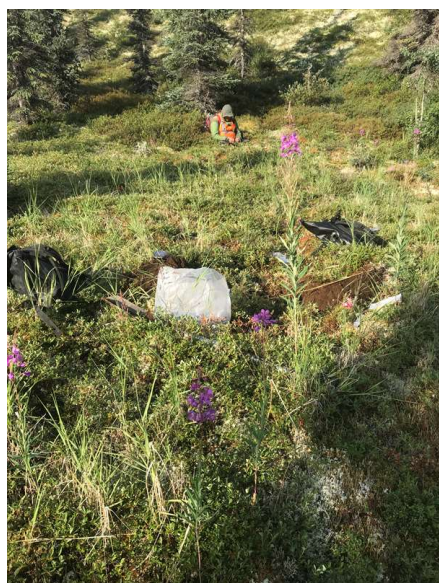
Photo Name: Photo\_190729094700

## Additional Reference Data: Photos

HDR7567\_19



**Photo Name:** Photo\_190729094749



**Photo Name:** Photo\_190729094821



**Photo Name:** Photo\_190729094809





**Photo Name:** Photo\_190729094736

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/29/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7569_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>3</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.840519</u>	Long: <u>-154.878220</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
NW1 Classification: <u>U</u>		

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If No, explain in Remarks)

Are Vegetation: Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation: Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		<b>Is the Sampled Area within a Wetland?</b>  Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b>
1. _____	_____	_____	_____	Number of Dominant Species
2. _____	_____	_____	_____	That Are OBL, FACW, or FAC: <u>6</u> (A)
3. _____	_____	_____	_____	Total Number of Dominant
4. _____	_____	_____	_____	Species Across All Strata: <u>6</u> (B)
Total Cover: _____				Percent of Dominant Species
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		That Are OBL, FACW, or FAC: <u>100</u> (A/B)
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index Worksheet:</b>
1. Rhododendron tomentosum	45	Yes	FAC	Total % Cover of: _____ Multiply by: _____
2. Empetrum nigrum	40	Yes	FAC	OBL species <u>10</u> x1= _____
3. Vaccinium uliginosum	30	Yes	FAC	FACW species <u>197</u> x2= <u>20</u>
4. Betula nana	20	No	FAC	FAC species <u>16</u> x3= <u>591</u>
5. Vaccinium vitis-idaea	20	No	FAC	FACU species <u>7</u> x4= <u>64</u>
6. Arctous rubra	7	No	FAC	UPL species _____ x5= _____
Total Cover: <u>188</u>				Column Totals: <u>223</u> (A) <u>675</u> (B)
50% of total cover: <u>94</u>		20% of total cover: <u>37.6</u>		Prevalence Index = B/A= <u>3.03</u>
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. Carex bigelowii	15	Yes	FAC	<input checked="" type="checkbox"/> Dominance Test is >50%
2. Calamagrostis canadensis	10	Yes	FAC	<input type="checkbox"/> Prevalence Index is ≤3.0
3. Rubus chamaemorus	10	Yes	FACW	<input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide
4. _____	_____	_____	_____	data in Remarks or on a separate sheet)
5. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. _____	_____	_____	_____	must be present, unless disturbed or problematic.
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>35</u>				
50% of total cover: <u>17.5</u>		20% of total cover: <u>7</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>0</u>		<b>Hydrophytic</b>
% Cover of Wetland Bryophytes <u>10</u>		% Cover of Bryophytes <u>20</u>		<b>Vegetation</b>
(Where applicable)				Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
				<b>Present?</b>

Remarks:

Lichen 45%. Hummocks small to moderate. Open DEST-H area surrounded by WSW and MFW. Pic gla (tree, 2%) moved to shrub stratum, due to the tree stratum having less than 5% overall cover.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4							N/A		hor:Oi
4-5	10YR 3/3	100					N/A	Silt Loam	hor:A
5-6							N/A		hor:Oe Buried
6-10	10YR 2/2	100					No	Silt Loam	hor:B1 High organic content. Moist.
10-18	7.5YR 2.5/2	100					No	Silt Loam	hor:B2
18-21	2.5Y 5/3	80	7.5YR 4/6	20	C	PL	No	Silty Clay Loam	hor:B Trace sand.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	MWD - Moderately Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: B2 and B3 layers are dry. Only B1 is moist. Soil surface begins at the top of A layer located at 4". Does not meet Alaska Redox with 2.5Y Hue. No primary hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Saturation Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
(includes capillary fringe)					<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary hydro indicators observed.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Picea glauca	7	No	FACU
Spiraea stevenii	7	No	FACU
Salix glauca	5	No	FAC
Salix pulchra	5	No	FAC
Picea glauca (tree)	2	No	FACU

Additional Reference Data: Photos

HDR7569\_19



Photo Name: Photo\_190729112850



Photo Name: Photo\_190729112751

## Additional Reference Data: Photos

HDR7569\_19



**Photo Name:** Photo\_190729112834



**Photo Name:** Photo\_190729112807



**Photo Name:** Photo\_190729112916

## Additional Reference Data: Photos

HDR7569\_19

**Photo Name:** Photo\_190729112858





# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/29/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7574_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Valleybottom</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>2</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.832531</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NW1 Classification: <u>PSS4/3B</u>	

Vegetation Type: Dwarf Black Spruce Scrub (DBSS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>18</u> <u>Multiply by:</u>
2. <u>Rhododendron tomentosum</u>	<u>25</u>	<u>No</u>	<u>FAC</u>	OBL species <u>18</u> x1= <u>18</u>
3. <u>Picea mariana</u>	<u>15</u>	<u>No</u>	<u>FACW</u>	FACW species <u>42</u> x2= <u>84</u>
4. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>128</u> x3= <u>384</u>
5. <u>Vaccinium uliginosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>Vaccinium vitis-idaea</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>144</u>				Column Totals: <u>188</u> (A) <u>486</u> (B)
50% of total cover: <u>72</u>				<u>Prevalence Index = B/A=</u> <u>2.59</u>
20% of total cover: <u>28.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Eriophorum vaginatum</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex pluriflora</u>	<u>10</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Rubus chamaemorus</u>	<u>7</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Eriophorum scheuchzeri</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Drosera rotundifolia</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>44</u>				
50% of total cover: <u>22</u>				
20% of total cover: <u>8.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>65</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>85</u>				<b>Present?</b>
(Where applicable)				

Remarks: Dwarf black spruce scrub.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A		hor:Oi
5-40							N/A		hor:Oe

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks: Saturated at 8". Water table at 37".

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> X Dry Season Water Table (C2)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> X Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	37.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	8.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Stunted black spruce.

Geomorphic Position: Valleybottom

Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Vaccinium oxycoccos</u>	<u>1</u>	<u>No</u>	<u>OBL</u>

Additional Reference Data: Photos

HDR7574\_19



Photo Name: Photo\_190729134605



Photo Name: Photo\_190729134624



## Additional Reference Data: Photos

HDR7574\_19



**Photo Name:** Photo\_190729134629



**Photo Name:** Photo\_190729134614



**Photo Name:** Photo\_190729134619

## Additional Reference Data: Photos

HDR7574\_19

**Photo Name:** Photo\_190729134535



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/29/2019  
 Applicant/Owner: PLP Sampling Point: HDR7575\_19  
 Investigators: MS, AH Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): None Slope(%): 2 HGM: N/A  
 Subregion (LRR): X Lat: 59.750103 Long: -154.873245 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Shrub Birch – Willow (SBW)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b> Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Betula papyrifera s.l. (tree)</u>	<u>7</u>	<u>Yes</u>	<u>FACU</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)
2. <u>      </u>				Total Number of Dominant
3. <u>      </u>				Species Across All Strata: <u>6</u> (B)
4. <u>      </u>				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
Total Cover: <u>7</u>				<b>Prevalence Index Worksheet:</b> <u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u> OBL species <u>      </u> x1= <u>      </u> FACW species <u>      </u> x2= <u>      </u> FAC species <u>251</u> x3= <u>753</u> FACU species <u>43</u> x4= <u>172</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>294</u> (A) <u>925</u> (B)  <i>Prevalence Index = B/A=</i> <u>3.15</u>
50% of total cover: <u>3.5</u>				
20% of total cover: <u>1.4</u>				
<u>Sapling/Shrub Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
1. <u>Rhododendron tomentosum</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Empetrum nigrum</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Vaccinium uliginosum</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
4. <u>Betula nana</u>	<u>30</u>	<u>No</u>	<u>FAC</u>	
5. <u>Betula kenaica</u>	<u>20</u>	<u>No</u>	<u>FACU</u>	
6. <u>Salix glauca</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
Total Cover: <u>263</u>				
50% of total cover: <u>131.5</u>				
20% of total cover: <u>52.6</u>				
<u>Herb Stratum</u>				
1. <u>Carex bigelowii</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Lupinus nootkatensis</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Chamaenerion angustifolium</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
4. <u>Deschampsia caespitosa</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
5. <u>      </u>				
6. <u>      </u>				
7. <u>      </u>				
8. <u>      </u>				
9. <u>      </u>				
10. <u>      </u>				
Total Cover: <u>24</u>				
50% of total cover: <u>12</u>				
20% of total cover: <u>4.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>			% Bare Ground <u>0</u>	
% Cover of Wetland Bryophytes <u>10</u>			% Cover of Bryophytes <u>20</u>	
(Where applicable)				

Remarks:

Lichen 7%.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-6							N/A		hor:Oi
6-14	10YR 2/2	100					N/A	Silt Loam	hor:A *2
14-21	10YR 3/4	100					N/A	Coarse Sandy	hor:B 70% gravels.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
Type:    None	
Depth (inches):    N/A	
Field Drainage Class:    WD - Well Drained	

Remarks: Dry throughout profile; as such, alpha-alpha not tested.    \*2: Cobble 50%. Gravel 20%. High organic content.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches):	
Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches):	
Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches): (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7575\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Salix pulchra	10	No	FAC
Vaccinium vitis-idaea	10	No	FAC
Spiraea stevenii	5	No	FACU
Picea glauca	3	No	FACU

Additional Reference Data: Photos

HDR7575\_19



Photo Name: Photo\_190729152606



Photo Name: Photo\_190729152458

## Additional Reference Data: Photos

HDR7575\_19



**Photo Name:** Photo\_190729152614



**Photo Name:** Photo\_190729152555



**Photo Name:** Photo\_190729152523



## Additional Reference Data: Photos

HDR7575\_19

**Photo Name:** Photo\_190729152623



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/30/2019  
 Applicant/Owner: PLP Sampling Point: HDR7577\_19  
 Investigators: MS, AH Landform (hillslope, terrace, etc.): Terrace  
 Local Relief (concave, convex, none): None Slope(%): 0 HGM: Slope  
 Subregion (LRR): X Lat: 59.873055 Long: -154.876404 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS4/3B

Vegetation Type: Black Spruce Woodland (BSW)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes      No X (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>		

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Picea mariana (tree)</u>	12	Yes	FACW	Number of Dominant Species
2. <u>    </u>				That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>    </u>				Total Number of Dominant
4. <u>    </u>				Species Across All Strata: <u>5</u> (B)
Total Cover: <u>12</u>				Percent of Dominant Species
50% of total cover: <u>6</u>		20% of total cover: <u>2.4</u>		That Are OBL, FACW, or FAC: <u>100</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Rhododendron tomentosum</u>	80	Yes	FAC	<u>Total % Cover of:</u> <u>    </u> <u>Multiply by:</u> <u>    </u>
2. <u>Empetrum nigrum</u>	30	Yes	FAC	OBL species <u>    </u> x1= <u>    </u>
3. <u>Betula nana</u>	20	No	FAC	FACW species <u>25</u> x2= <u>50</u>
4. <u>Vaccinium uliginosum</u>	20	No	FAC	FAC species <u>164</u> x3= <u>492</u>
5. <u>Vaccinium vitis-idaea</u>	8	No	FAC	FACU species <u>4</u> x4= <u>16</u>
6. <u>Picea mariana</u>	8	No	FACW	UPL species <u>    </u> x5= <u>    </u>
Total Cover: <u>170</u>				Column Totals: <u>193</u> (A) <u>558</u> (B)
50% of total cover: <u>85</u>		20% of total cover: <u>34</u>		<u>Prevalence Index = B/A=</u> <u>2.89</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Rubus chamaemorus</u>	5	Yes	FACW	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	3	Yes	FAC	<u>X</u> Prevalence Index is ≤3.0
3. <u>Carex bigelowii</u>	2	No	FAC	<u>    </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Equisetum sylvaticum</u>	1	No	FAC	data in Remarks or on a separate sheet)
5. <u>    </u>				<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>    </u>				
7. <u>    </u>				
8. <u>    </u>				
9. <u>    </u>				
10. <u>    </u>				
Total Cover: <u>11</u>				
50% of total cover: <u>5.5</u>		20% of total cover: <u>2.2</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>30</u>		% Cover of Bryophytes <u>80</u>		
(Where applicable)				

Remarks:  
Lichen 3%.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-8	7.5YR 3/1	50					N/A		hor:Oi *1
8-17	7.5YR 2.5/1	100					No	Silt Loam	hor:A Trace sand
17-24	7.5YR 2.5/2	100					No	Sandy Loam	hor:B *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b>	Yes	<u>X</u>	No	<u>          </u>
Type:	<u>None</u>					
Depth (inches):	<u>N/A</u>					
Field Drainage Class:	<u>SPD - Somewhat Poorly Drained</u>					

Remarks: Typically saturated for two weeks of growing season, based on secondary hydrology indicators. Geomorphic position, stunted black spruce, and FAC-Neutral. \*1: Color of Oi does not include color of sphagnum or roots. \*3: With patches of organic staining

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> X	No	
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
Water Table Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
Saturation Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
(includes capillary fringe)							

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Dry season. Stunted black spruce.  
  
Geomorphic Position: Adjacent to river.



Additional Reference Data: Overflow Vegetation

HDR7577\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Spiraea stevenii</u>	<u>4</u>	<u>No</u>	<u>FACU</u>

Additional Reference Data: Photos

HDR7577\_19



Photo Name: Photo\_190730090347



Photo Name: Photo\_190730090336

## Additional Reference Data: Photos

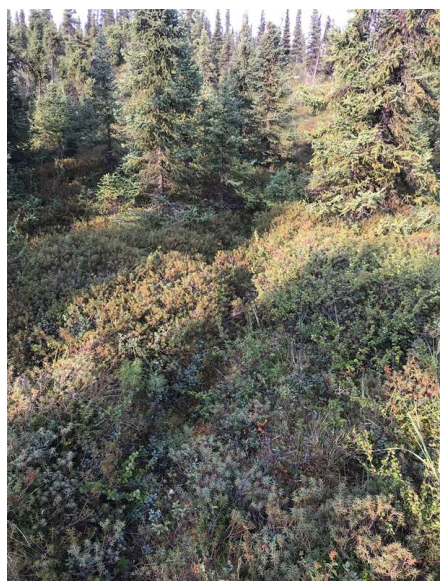
HDR7577\_19



**Photo Name:** Photo\_190730090324



**Photo Name:** Photo\_190730090332



**Photo Name:** Photo\_190730090341

**Photo Name:** Photo\_190730090233





Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	7/30/2019
Applicant/Owner:	PLP			Sampling Point:	HDR7578_19
Investigators:	MS, AH	Landform (hillslope, terrace, etc.):	Footslope		
Local Relief (concave, convex, none):	None	Slope(%):	4	HGM:	N/A
Subregion (LRR):	X	Lat:	59.872910	Long:	-154.876694
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.) \_\_\_\_\_

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1.	Picea glauca (tree)	10	Yes	FACU	Number of Dominant Species	
2.	Picea mariana (tree)	5	Yes	FACW	That Are OBL, FACW, or FAC: 3 (A)	
3.					Total Number of Dominant	
4.					Species Across All Strata: 4 (B)	
Total Cover:		15			Percent of Dominant Species	
50% of total cover:		7.5	20% of total cover:	3	That Are OBL, FACW, or FAC: 75 (A/B)	
Sapling/Shrub Stratum					Prevalence Index Worksheet:	
1.	Rhododendron tomentosum	50	Yes	FAC	Total % Cover of: Multiply by:	
2.	Empetrum nigrum	40	Yes	FAC	OBL species x1=	
3.	Vaccinium uliginosum	25	No	FAC	FACW species 8 x2= 16	
4.	Betula nana	20	No	FAC	FAC species 169 x3= 507	
5.	Salix glauca	15	No	FAC	FACU species 13 x4= 52	
6.	Vaccinium vitis-idaea	10	No	FAC	UPL species x5=	
Total Cover:		175			Column Totals: 190 (A) 575 (B)	
50% of total cover:		87.5	20% of total cover:	35	Prevalence Index = B/A= 3.03	
Herb Stratum					Hydrophytic Vegetation Indicators:	
1.					X Dominance Test is >50%	
2.					Prevalence Index is ≤3.0	
3.					Morphological Adaptations <sup>1</sup> (Provide	
4.					data in Remarks or on a separate sheet)	
5.					Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
6.						
7.					*Indicators of hydric soil and wetland hydrology	
8.					must be present, unless disturbed or problematic.	
9.						
10.						
Total Cover:					Hydrophytic	
50% of total cover:		0	20% of total cover:	0	Vegetation	
Plot size (radius, or length x width)		20 X 40 feet	% Bare Ground	3	Yes X No	
% Cover of Wetland Bryophytes		0	% Cover of Bryophytes <sup>5</sup>		Present?	
(Where applicable)						

Remarks:
Lichen 15%. Car big (1%) and Cal can (2%) moved to shrub stratum, due to herb stratum having less than 5% overall cover.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A		hor:Oi
5-9	7.5YR 2.5/2	100					N/A	Sandy Loam	hor:A
9-14	10YR 3/3	100					No	Sandy Loam	hor:B1 5% gravels. 10% coarse sand.
14-20	10YR 3/2	100					No	Coarse Sandy	hor:B2 60% coarse sand

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: Dry throughout profile

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydro indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7578\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Arctostaphylos alpina	3	No	FAC
Salix pulchra	3	No	FAC
Picea glauca	3	No	FACU
Picea mariana	3	No	FACW
Calamagrostis canadensis	2	No	FAC
Carex bigelowii	1	No	FAC

Additional Reference Data: Photos

HDR7578\_19



Photo Name: Photo\_190730093414



Photo Name: Photo\_190730093454



## Additional Reference Data: Photos

HDR7578\_19



**Photo Name:** Photo\_190730093430



**Photo Name:** Photo\_190730093441



**Photo Name:** Photo\_190730093448

Photo Name: Photo\_190730093458



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/30/2019  
 Applicant/Owner: PLP Sampling Point: HDR7579\_19  
 Investigators: MS, AH Landform (hillslope, terrace, etc.): Terrace  
 Local Relief (concave, convex, none): None Slope(%): 0 HGM: N/A  
 Subregion (LRR): X Lat: 59.874210 Long: -154.876648 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: White Spruce Woodland (WSW)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Picea glauca (tree)</u>	8	Yes	FACU	Number of Dominant Species
2. <u>Picea mariana (tree)</u>	7	Yes	FACW	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>				Total Number of Dominant
4. <u>      </u>				Species Across All Strata: <u>6</u> (B)
	Total Cover: <u>15</u>			Percent of Dominant Species
	50% of total cover: <u>7.5</u>	20% of total cover: <u>3</u>		That Are OBL, FACW, or FAC: <u>83</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Betula nana</u>	60	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Vaccinium uliginosum</u>	60	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium vitis-idaea</u>	10	No	FAC	FACW species <u>19</u> x2= <u>38</u>
4. <u>Picea glauca</u>	5	No	FACU	FAC species <u>158</u> x3= <u>474</u>
5. <u>Spiraea stevenii</u>	3	No	FACU	FACU species <u>16</u> x4= <u>64</u>
6. <u>Salix pulchra</u>	2	No	FAC	UPL species <u>      </u> x5= <u>      </u>
	Total Cover: <u>142</u>			Column Totals: <u>193</u> (A) <u>576</u> (B)
	50% of total cover: <u>71</u>	20% of total cover: <u>28.4</u>		<u>Prevalence Index = B/A=</u> <u>2.98</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum sylvaticum</u>	20	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Rubus chamaemorus</u>	10	Yes	FACW	<u>X</u> Prevalence Index is ≤3.0
3. <u>Calamagrostis canadensis</u>	3	No	FAC	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex bigelowii</u>	3	No	FAC	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>				<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>				
7. <u>      </u>				
8. <u>      </u>				
9. <u>      </u>				
10. <u>      </u>				
	Total Cover: <u>36</u>			
	50% of total cover: <u>18</u>	20% of total cover: <u>7.2</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>15</u>		% Cover of Bryophytes <u>80</u>		
(Where applicable)				

Remarks: Bet nan is 3' tall. Lichen 3%.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5							N/A		hor:Oi
5-10	7.5YR 2.5/1	90					No	Silt Loam	hor:A Lots of organic staining
5-10	7.5YR 3/2	10					No	Silt Loam	hor:A Lots of organic staining
10-17	7.5YR 3/2	98	7.5YR 3/3	2	C	PL	No	Silt Loam	hor:B1
17-22	10YR 3/3	95	7.5YR 4/6	5	C	PL	No	Silt Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

<b>Hydric Soil Indicators:</b>	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>		
Type: <u>None</u>		
Depth (inches): <u>N/A</u>		
Field Drainage Class: <u>MWD - Moderately Well Drained</u>		
	<b>Hydric Soil Present?</b>	Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Remarks: Slightly moist throughout mineral layers but not saturated. Based on the fact that there was no saturation down to 22 inches, it is unlikely a water table would occur within 24 inches.

HYDROLOGY

<b>Wetland Hydrology Indicators:</b>	<b>Secondary Indicators (2 or more required)</b>	
Primary Indicators (minimum of one required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>		
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches): <u></u>		
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches): <u></u>		
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X <input type="checkbox"/> Depth (inches): <u></u> (includes capillary fringe)		
	<b>Wetland Hydrology Present?</b>	Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Slightly moist throughout. Not saturated. No primary hydrology indicators observed. Based on the fact that there was no saturation down to 22 inches, it is unlikely a water table would occur within 24 inches.
Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7579\_19

	Absolute	Dominant	Indicator
Sapling/Shrub	% Cover	Species?	Status
Picea mariana	2	No	FACW

Additional Reference Data: Photos

HDR7579\_19

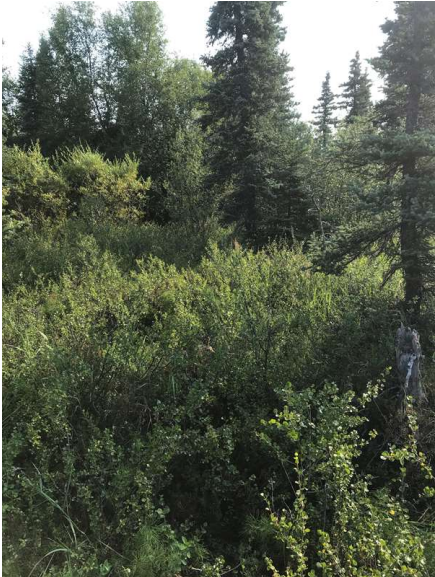


Photo Name: Photo\_190730101433



Photo Name: Photo\_190730101440

## Additional Reference Data: Photos

HDR7579\_19



**Photo Name:** Photo\_190730101414



**Photo Name:** Photo\_190730101524



**Photo Name:** Photo\_190730101357



## Additional Reference Data: Photos

HDR7579\_19

**Photo Name:** Photo\_190730101425



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/30/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7580_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Terrace</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>0</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.873978</u>	Long: <u>-154.876541</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>PSS1/ EM1C</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.		

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Betula papyrifera s.l. (tree)</u>	<u>7</u>	<u>Yes</u>	<u>FACU</u>	Number of Dominant Species
2. <u>      </u>				That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>				Total Number of Dominant
4. <u>      </u>				Species Across All Strata: <u>5</u> (B)
Total Cover: <u>7</u>				Percent of Dominant Species
50% of total cover: <u>3.5</u>		20% of total cover: <u>1.4</u>		That Are OBL, FACW, or FAC: <u>80</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Salix fuscescens</u>	<u>60</u>	<u>Yes</u>	<u>FACW</u>	<u>Total % Cover of:</u> <u>46</u> <u>Multiply by:</u>
2. <u>Salix pulchra</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>46</u> x1= <u>46</u>
3. <u>Vaccinium uliginosum</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FACW species <u>78</u> x2= <u>156</u>
4. <u>Rhododendron tomentosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>133</u> x3= <u>399</u>
5. <u>Betula kenaica</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	FACU species <u>20</u> x4= <u>80</u>
6. <u>Andromeda polifolia</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>123</u>				Column Totals: <u>277</u> (A) <u>681</u> (B)
50% of total cover: <u>61.5</u>		20% of total cover: <u>24.6</u>		<u>Prevalence Index = B/A=</u> <u>2.46</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex utriculata</u>	<u>25</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Comarum palustre</u>	<u>20</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex saxatilis</u>	<u>15</u>	<u>No</u>	<u>FACW</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Equisetum arvense</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Carex bigelowii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Equisetum sylvaticum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
8. <u>Rubus arcticus s.l.</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
9. <u>Chamaenerion angustifolium</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
10. <u>Carex canescens</u>	<u>1</u>	<u>No</u>	<u>OBL</u>	
Total Cover: <u>147</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>73.5</u>		20% of total cover: <u>29.4</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>60</u>		% Cover of Bryophytes <u>60</u>		
(Where applicable)				
Remarks: Lichen 0%. Water 30%.				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-10							N/A		hor:Oi
10-13	10YR 3/2	100					Yes	Silt Loam	hor:A
13-20	5Y 6/2	80	7.5YR 4/6	20	C	RC	Yes	Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input checked="" type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>		
Type:	<u>  None  </u>				
Depth (inches):	<u>  N/A  </u>				
Field Drainage Class:	<u>  PD - Poorly Drained  </u>				

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>			
Water Table Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>			
Saturation Present? (includes capillary fringe)	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>			
	Depth (inches):	6.0			
	Depth (inches):	0.0			
	Depth (inches):	0.0			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:



## Additional Reference Data: Photos

HDR7580\_19



**Photo Name:** Photo\_190730104503



**Photo Name:** Photo\_190730104459



**Photo Name:** Photo\_190730104437

## Additional Reference Data: Photos

HDR7580\_19



**Photo Name:** Photo\_190730104510



**Photo Name:** Photo\_190730104517



**Photo Name:** Photo\_190730104447

Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	7/30/2019
Applicant/Owner:	PLP			Sampling Point:	HDR7582_19
Investigators:	MS, AH	Landform (hillslope, terrace, etc.):	Terrace		
Local Relief (concave, convex, none):	None	Slope(%):	0	HGM:	N/A
Subregion (LRR):	X	Lat:	59.874279	Long:	-154.849030
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.) \_\_\_\_\_

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Tree Stratum				Dominance Test Worksheet:			
Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)			
1. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)			
2. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)			
3. _____	_____	_____	_____				
4. _____	_____	_____	_____				
Total Cover: _____							
50% of total cover: <u>0</u>				20% of total cover: <u>0</u>			
Sapling/Shrub Stratum				Prevalence Index Worksheet:			
1. Rhododendron tomentosum	80	Yes	FAC	Total % Cover of: _____ Multiply by: _____			
2. Betula nana	30	Yes	FAC	OBL species _____ x1= _____			
3. Vaccinium vitis-idaea	5	No	FAC	FACW species _____ x2= _____			
4. Calamagrostis canadensis	2	No	FAC	FAC species <u>120</u> x3= <u>360</u>			
5. Vaccinium uliginosum	2	No	FAC	FACU species <u>2</u> x4= <u>8</u>			
6. Carex bigelowii	1	No	FAC	UPL species _____ x5= _____			
Total Cover: <u>122</u>				Column Totals: <u>122</u> (A) <u>368</u> (B)			
50% of total cover: <u>61</u>				Prevalence Index = B/A= <u>3.02</u>			
20% of total cover: <u>24.4</u>							
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. _____	_____	_____	_____	X Dominance Test is >50%			
2. _____	_____	_____	_____	Prevalence Index is ≤3.0			
3. _____	_____	_____	_____	Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)			
4. _____	_____	_____	_____	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)			
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____	*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
8. _____	_____	_____	_____				
9. _____	_____	_____	_____				
10. _____	_____	_____	_____				
Total Cover: _____							
50% of total cover: <u>0</u>				20% of total cover: <u>0</u>			
Plot size (radius, or length x width) <u>1/10 acre</u>				% Bare Ground <u>0</u>			
% Cover of Wetland Bryophytes <u>0</u>				% Cover of Bryophytes <u>50</u>			
(Where applicable)							
				Hydrophytic Vegetation Present? Yes <u>X</u> No _____			

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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oi
3-11	5YR 2.5/1	100					N/A	Sandy Loam	hor:A *2
11-20	7.5YR 2.5/3	20					N/A	Sandy Loam	hor:B
11-20	7.5YR 4/6	80					N/A	Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes _____ No _____ X _____	
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		

Remarks: Dry throughout soil profile; as such, alpha-alpha not tested. \*2: Organic staining at top of layer. Small amounts of ash mixed throughout.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/>	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/>	<input type="checkbox"/> Salt Deposits (C5)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/>	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/>	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> FAC-Neutral Test (D5)	<input type="checkbox"/>	<input type="checkbox"/>

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):			
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):			
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Dry pit. No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7582\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Picea glauca	1	No	FACU
Populus tremuloides	1	No	FACU

Additional Reference Data: Photos

HDR7582\_19

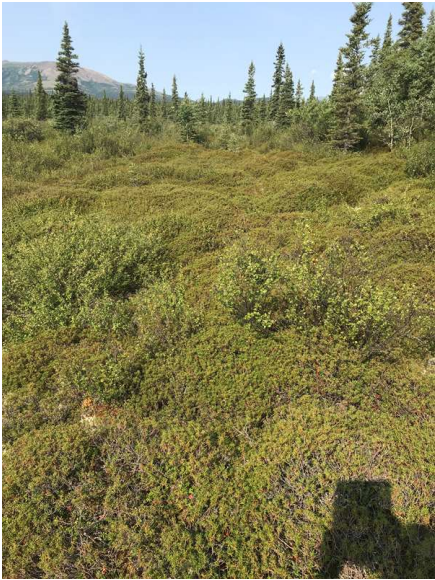


Photo Name: Photo\_190730114607

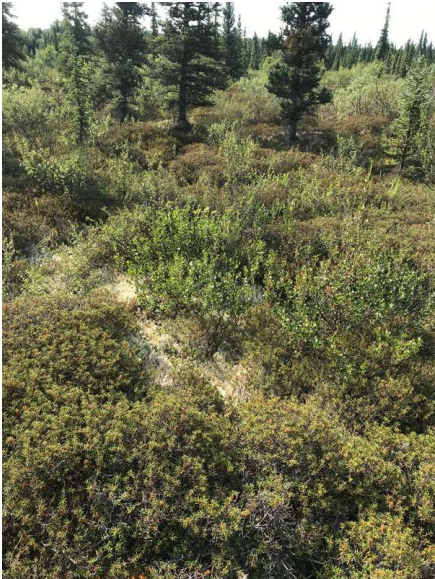


Photo Name: Photo\_190730114601

## Additional Reference Data: Photos

HDR7582\_19



**Photo Name:** Photo\_190730114557



**Photo Name:** Photo\_190730114551



**Photo Name:** Photo\_190730114534



## Additional Reference Data: Photos

HDR7582\_19

**Photo Name:** Photo\_190730114543



Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	7/30/2019
Applicant/Owner:	PLP			Sampling Point:	HDR7584_19
Investigators:	MS, AH	Landform (hillslope, terrace, etc.):	Kettle		
Local Relief (concave, convex, none):	Concave	Slope(%):	3	HGM:	Slope
Subregion (LRR):	X	Lat:	59.873142	Long:	-154.871033
				Datum:	WGS84
Soil Map Unit Name:	N/A		NWI Classification:	PSS3/EM1B	

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>		

Tree Stratum				Dominance Test Worksheet:			
		Absolute % Cover	Dominant Species?	Indicator Status	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)		
1.					Total Number of Dominant Species Across All Strata: <u>3</u> (B)		
2.					Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)		
3.							
4.							
Total Cover:							
50% of total cover:		<u>0</u>	20% of total cover:	<u>0</u>			
Sapling/Shrub Stratum				Prevalence Index Worksheet:			
					Total % Cover of: <u>          </u> Multiply by: <u>          </u>		
1.	Andromeda polifolia	50	Yes	FACW	OBL species	<u>          </u> x1=	<u>          </u>
2.	Betula nana	20	Yes	FAC	FACW species	<u>88</u> x2=	<u>176</u>
3.	Salix pulchra	8	No	FAC	FAC species	<u>44</u> x3=	<u>132</u>
4.	Salix fuscescens	7	No	FACW	FACU species	<u>          </u> x4=	<u>          </u>
5.	Vaccinium uliginosum	5	No	FAC	UPL species	<u>          </u> x5=	<u>          </u>
6.	Rhododendron tomentosum	2	No	FAC	Column Totals:	<u>132</u> (A)	<u>308</u> (B)
Total Cover:		<u>94</u>					
50% of total cover:		<u>47</u>	20% of total cover:	<u>18.8</u>	Prevalence Index = B/A= <u>2.33</u>		
Herb Stratum				Hydrophytic Vegetation Indicators:			
1.	Carex stylosa	30	Yes	FACW	X	Dominance Test is >50%	
2.	Calamagrostis canadensis	7	No	FAC	X	Prevalence Index is ≤3.0	
3.	Rubus chamaemorus	1	No	FACW		Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)	
4.						Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
5.							
6.							
7.							
8.							
9.							
10.							
Total Cover:		<u>38</u>					
50% of total cover:		<u>19</u>	20% of total cover:	<u>7.6</u>			
Plot size (radius, or length x width)		<u>30 X 30 feet</u>	% Bare Ground	<u>5</u>			
% Cover of Wetland Bryophytes		<u>0</u>	% Cover of Bryophytes	<u>60</u>			
(Where applicable)							
					Hydrophytic Vegetation Present? Yes <u>X</u> No <u>          </u>		

Remarks:
Lichen 12%.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-4							N/A		hor:Oa
4-9	10YR 2/1	100					N/A	Silt Loam	hor:A
9-11	10YR 4/3	100					No	Very Fine Sandy	hor:B1
11-15	2.5Y 5/3	98	7.5YR 3/3	2	C	PL	No	Very Fine Sandy	hor:B2
15-24	5Y 5/2	90	7.5YR 4/6	2	C	PL	No	Very Fine Sandy	hor:B
15-24			7.5YR 5/6	8	C	PL	No	Very Fine Sandy	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input checked="" type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>SPD - Somewhat Poorly Drained</u>	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:				Secondary Indicators (2 or more required)				
Primary Indicators (minimum of one required; check all that apply)				Water-stained Leaves (B9)				
<input type="checkbox"/> Surface Water (A1)			<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)				
<input type="checkbox"/> High Water Table (A2)			<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)				
<input type="checkbox"/> Saturation (A3)			<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)				
<input type="checkbox"/> Water Marks (B1)			<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)				
<input type="checkbox"/> Sediment Deposits (B2)			<input checked="" type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)				
<input type="checkbox"/> Drift Deposits (B3)			<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)				
<input type="checkbox"/> Algal Mat or Crust (B4)				<input type="checkbox"/> Shallow Aquitard (D3)				
<input type="checkbox"/> Iron Deposits (B5)				<input type="checkbox"/> Microtopographic Relief (D4)				
<input type="checkbox"/> Surface Soil Cracks (B6)				<input checked="" type="checkbox"/> FAC-Neutral Test (D5)				
<b>Field Observations:</b>				<b>Wetland Hydrology Present?</b> <b>Yes</b> <input checked="" type="checkbox"/> <b>No</b> <input type="checkbox"/>				
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):					<input type="text" value="23.0"/>
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No <input type="checkbox"/>	Depth (inches):					<input type="text" value="22.0"/>
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No <input type="checkbox"/>	Depth (inches):					<input type="text" value=""/>
(includes capillary fringe)								

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position: Depression



Additional Reference Data: Overflow Vegetation

HDR7584\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Vaccinium vitis-idaea</u>	<u>2</u>	<u>No</u>	<u>FAC</u>

Additional Reference Data: Photos

HDR7584\_19



Photo Name: Photo\_190730132300



Photo Name: Photo\_190730132251

## Additional Reference Data: Photos

HDR7584\_19



**Photo Name:** Photo\_190730132318



**Photo Name:** Photo\_190730132325



**Photo Name:** Photo\_190730132306

## Additional Reference Data: Photos

HDR7584\_19

Photo Name: Photo\_190730132237





# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/30/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7588_19</u>	
Investigators: <u>MS, AH</u>	Landform (hillslope, terrace, etc.): <u>Knob</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): <u>4</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.874355</u>	Long: <u>-154.866302</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Dwarf White Spruce Scrub (DWSS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Picea glauca (tree)</u>	5	Yes	FACU	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)
2. <u>      </u>				Total Number of Dominant Species Across All Strata: <u>9</u> (B)
3. <u>      </u>				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>56</u> (A/B)
4. <u>      </u>				
Total Cover: <u>5</u>				
50% of total cover: <u>2.5</u>		20% of total cover: <u>1</u>		
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Rhododendron tomentosum</u>	30	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Betula nana</u>	20	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium vitis-idaea</u>	12	No	FAC	FACW species <u>      </u> x2= <u>      </u>
4. <u>Picea glauca</u>	12	No	FACU	FAC species <u>79</u> x3= <u>237</u>
5. <u>Empetrum nigrum</u>	5	No	FAC	FACU species <u>19</u> x4= <u>76</u>
6. <u>Salix glauca</u>	5	No	FAC	UPL species <u>2</u> x5= <u>10</u>
Total Cover: <u>87</u>				Column Totals: <u>100</u> (A) <u>323</u> (B)
50% of total cover: <u>43.5</u>		20% of total cover: <u>17.4</u>		<u>Prevalence Index = B/A=</u> <u>3.23</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	2	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Chamaenerion angustifolium</u>	2	Yes	FACU	Prevalence Index is ≤3.0
3. <u>Agrostis scabra</u>	1	Yes	FAC	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Deschampsia caespitosa</u>	1	Yes	FAC	data in Remarks or on a separate sheet)
5. <u>Artemisia arctica</u>	1	Yes	NL	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Hierochloa alpina</u>	1	Yes	NL	
7. <u>      </u>				
8. <u>      </u>				
9. <u>      </u>				
10. <u>      </u>				
Total Cover: <u>8</u>				
50% of total cover: <u>4</u>		20% of total cover: <u>1.6</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic Vegetation</b> Yes <u>X</u> No <u>      </u>
% Cover of Wetland Bryophytes <u>0</u>				<b>Present?</b>
(Where applicable)				

Remarks:

Plot is as big as polygon. Lichen 5%.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oe
2-11	10YR 3/3	40					N/A	Silt Loam	hor:A
2-11	10YR 4/4	60					N/A	Silt Loam	hor:A
11-20	10YR 3/4	100					N/A	Loamy Sand	hor:B 20% cobble

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Dry throughout profile; as such, alpha-alpha not tested.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Microtopographic Relief (D4)
	<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
On top of a knob. No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7588\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Vaccinium uliginosum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>
<u>Arctostaphylos alpina</u>	<u>1</u>	<u>No</u>	<u>FAC</u>

Additional Reference Data: Photos

HDR7588\_19



Photo Name: Photo\_190730142903



Photo Name: Photo\_190730142838



## Additional Reference Data: Photos

HDR7588\_19



**Photo Name:** Photo\_190730142818



**Photo Name:** Photo\_190730142856



**Photo Name:** Photo\_190730142844

## Additional Reference Data: Photos

HDR7588\_19

**Photo Name:** Photo\_190730142851



Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	9/6/2019
Applicant/Owner:	PLP			Sampling Point:	HDR7711_19
Investigators:	MNW, VW	Landform (hillslope, terrace, etc.):	Hillside		
Local Relief (concave, convex, none):	None	Slope(%):	11	HGM:	N/A
Subregion (LRR):	X	Lat:	59.926128	Long:	-155.298813
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No   X   (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes   X   No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>      </u> X
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
Total Cover:				
50% of total cover:		0	20% of total cover:	0
Sapling/Shrub Stratum				
1.				
2.				
3.				
4.				
5.				
6.				
Total Cover:				
50% of total cover:		0	20% of total cover:	0
Herb Stratum				
1.	Calamagrostis canadensis	99	Yes	FAC
2.	Chamaenerion angustifolium	2	No	FACU
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
Total Cover:		101		
50% of total cover:		50.5	20% of total cover:	20.2
Plot size (radius, or length x width)			% Bare Ground	0
% Cover of Wetland Bryophytes		0	% Cover of Bryophytes	0
(Where applicable)				

**Dominance Test Worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index Worksheet:**

Total % Cover of: Multiply by:

OBL species		x1=	
FACW species		x2=	
FAC species	99	x3=	297
FACU species	2	x4=	8
UPL species		x5=	
Column Totals:	101 (A)		305 (B)

Prevalence Index = B/A= 3.02

**Hydrophytic Vegetation Indicators:**

X Dominance Test is >50%

Prevalence Index is ≤3.0

Morphological Adaptations<sup>1</sup> (Provide data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?**

Yes X No

2311 of 2979



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-4	10YR 3/3	100						Silt Loam	hor:A
4-6	10YR 4/3	100						Silt Loam	hor:E With roots
6-10	10YR 3/4	100						Fine Sandy Loam	hor:B1 With roots
10-15	10YR 2/2	100						Silt Loam	hor:B2 With roots
15-24	10YR 3/6	100						Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>WD - Well Drained</u>	

Remarks: Soil is very dry. Too dry to apply alpha alpha.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> FAC-Neutral Test (D5)		

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No hydrology indicators observed.

Geomorphic Position:

## Additional Reference Data: Photos

HDR7711\_19



**Photo Name:** Photo\_190906083635



**Photo Name:** Photo\_190906083533



**Photo Name:** Photo\_190906083628

## Additional Reference Data: Photos

HDR7711\_19



**Photo Name:** Photo\_190906083552



**Photo Name:** Photo\_190906083622



**Photo Name:** Photo\_190906083616



Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	9/6/2019
Applicant/Owner:	PLP			Sampling Point:	HDR7712_19
Investigators:	MNW, VW	Landform (hillslope, terrace, etc.):	Hillside		
Local Relief (concave, convex, none):	None	Slope(%):	17	HGM:	N/A
Subregion (LRR):	X	Lat:	59.926090	Long:	-155.298370
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.) \_\_\_\_\_

Hydrophytic Vegetation Present?	Yes <u>      </u>	No <u>  X  </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>          </u>	No <u>      </u> X
Hydric Soil Present?	Yes <u>      </u>	No <u>  X  </u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>  X  </u>			

Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:			
1.					Number of Dominant Species			
2.					That Are OBL, FACW, or FAC: 2 (A)			
3.					Total Number of Dominant			
4.					Species Across All Strata: 4 (B)			
Total Cover: _____					Percent of Dominant Species			
50% of total cover: 0					That Are OBL, FACW, or FAC: 50 (A/B)			
20% of total cover: 0								
Sapling/Shrub Stratum					Prevalence Index Worksheet:			
1.	Spiraea stevenii	20	Yes	FACU	Total % Cover of:		Multiply by:	
2.	Betula nana	8	Yes	FAC	OBL species	x1=		
3.	Rhododendron tomentosum	5	No	FAC	FACW species	5 x2=	10	
4.	Empetrum nigrum	4	No	FAC	FAC species	80 x3=	240	
5.	Vaccinium vitis-idaea	1	No	FAC	FACU species	65 x4=	260	
6.					UPL species	x5=		
Total Cover: 38					Column Totals:	150 (A)	510 (B)	
50% of total cover: 19					Prevalence Index = B/A= 3.40			
20% of total cover: 7.6								
Herb Stratum					Hydrophytic Vegetation Indicators:			
1.	Calamagrostis canadensis	55	Yes	FAC	Dominance Test is >50%			
2.	Chamaenerion angustifolium	40	Yes	FACU	Prevalence Index is ≤3.0			
3.	Equisetum arvense	6	No	FAC	Morphological Adaptations <sup>1</sup> (Provide			
4.	Petasites frigidus s.l.	5	No	FACW	data in Remarks or on a separate sheet)			
5.	Dryopteris expansa	3	No	FACU	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)			
6.	Angelica lucida	2	No	FACU				
7.	Rubus arcticus s.l.	1	No	FAC	*Indicators of hydric soil and wetland hydrology			
8.					must be present, unless disturbed or problematic.			
9.								
10.								
Total Cover: 112								
50% of total cover: 56								
20% of total cover: 22.4								
Plot size (radius, or length x width) 40 X 40 feet					% Bare Ground 0			
% Cover of Wetland Bryophytes 0		% Cover of Bryophytes 40			Hydrophytic Vegetation Present? Yes ___ No ___ X ___			
(Where applicable)								

Remarks:
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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-9	10YR 3/3	100					No	Fine Sandy Loam	hor:A
9-24	10YR 3/4	100					No	Sandy Loam	hor:B 10% gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ <u>X</u>

Remarks: No indicators.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Saturation Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
(includes capillary fringe)					<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No indicators.

Geomorphic Position:



**Photo Name:** Photo\_190906090101



**Photo Name:** Photo\_190906085906



**Photo Name:** Photo\_190906085915



## Additional Reference Data: Photos

HDR7712\_19



**Photo Name:** Photo\_190906090038



**Photo Name:** Photo\_190906090050



**Photo Name:** Photo\_190906090024

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 9/6/2019  
 Applicant/Owner: PLP Sampling Point: HDR7713\_19  
 Investigators: MNW, VW Landform (hillslope, terrace, etc.): Hillside  
 Local Relief (concave, convex, none): None Slope(%): 8 HGM: N/A  
 Subregion (LRR): X Lat: 59.925816 Long: -155.297470 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra (DEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Moderate Drought conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index Worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Empetrum nigrum</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>Rhododendron tomentosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>5</u> x2= <u>10</u>
3. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	FAC species <u>122</u> x3= <u>366</u>
4. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>3</u> x4= <u>12</u>
5. <u>Salix pulchra</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>130</u> (A) <u>388</u> (B)
Total Cover: <u>105</u>				<u>Prevalence Index = B/A=</u> <u>2.98</u>
50% of total cover: <u>52.5</u>				
20% of total cover: <u>21</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	<u>12</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex bigelowii</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Chamaenerion angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Bistorta plumosa</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>25</u>				
50% of total cover: <u>12.5</u>				
20% of total cover: <u>5</u>				
Plot size (radius, or length x width) <u>40 X 40 feet</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>0</u>				
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-7	10YR 2/1	100						Silt Loam	hor:A
7-10	7.5YR 2.5/2	100						Silt Loam	hor:B1 With 10% gravels
10-24	10YR 4/3	100						Fine Sandy Loam	hor:B2 With 30% gravels

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Very dry soil. Too dry to apply alpha alpha.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Microtopographic Relief (D4)
	<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No hydrology indicators observed.

Geomorphic Position:



## Additional Reference Data: Photos

HDR7713\_19



**Photo Name:** Photo\_190906094047



**Photo Name:** Photo\_190906094106



**Photo Name:** Photo\_190906094115

## Additional Reference Data: Photos

HDR7713\_19



**Photo Name:** Photo\_190906094141



**Photo Name:** Photo\_190906094126



**Photo Name:** Photo\_190906094035

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>9/6/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7714_19</u>	
Investigators: <u>MNW, VW</u>	Landform (hillslope, terrace, etc.): <u>Hillside</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>3</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.926151</u>	Long: <u>-155.295547</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Dwarf Ericaceous Shrub Tundra – Equisetum (DEST-EQ)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If No, explain in Remarks)

Are Vegetation: ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation: ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		<b>Is the Sampled Area within a Wetland?</b>  Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks: <u>Moderate Drought conditions according to the National Drought Mitigation Center.</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b>
1. _____	_____	_____	_____	Number of Dominant Species
2. _____	_____	_____	_____	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. _____	_____	_____	_____	Total Number of Dominant
4. _____	_____	_____	_____	Species Across All Strata: <u>5</u> (B)
Total Cover: _____				Percent of Dominant Species
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		That Are OBL, FACW, or FAC: <u>80</u> (A/B)
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	25	Yes	FAC	<u>Total % Cover of:</u> <u>1</u> <u>Multiply by:</u>
2. <u>Rhododendron tomentosum</u>	20	Yes	FAC	OBL species <u>1</u> x1= <u>1</u>
3. <u>Betula nana</u>	10	No	FAC	FACW species <u>6</u> x2= <u>12</u>
4. <u>Salix pulchra</u>	5	No	FAC	FAC species <u>149</u> x3= <u>447</u>
5. <u>Vaccinium uliginosum</u>	4	No	FAC	FACU species <u>24</u> x4= <u>96</u>
6. <u>Vaccinium vitis-idaea</u>	3	No	FAC	UPL species <u>1</u> x5= <u>5</u>
Total Cover: <u>69</u>				Column Totals: <u>181</u> (A) <u>561</u> (B)
50% of total cover: <u>34.5</u>		20% of total cover: <u>13.8</u>		<u>Prevalence Index = B/A=</u> <u>3.10</u>
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	55	Yes	FAC	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Carex bigelowii</u>	20	Yes	FAC	<input type="checkbox"/> Prevalence Index is ≤3.0
3. <u>Chamaenerion angustifolium</u>	20	Yes	FACU	<input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Calamagrostis canadensis</u>	5	No	FAC	data in Remarks or on a separate sheet)
5. <u>Rubus chamaemorus</u>	4	No	FACW	<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Angelica lucida</u>	2	No	FACU	
7. <u>Trientalis europaea</u>	2	No	FACU	
8. <u>Petasites frigidus s.l.</u>	2	No	FACW	
9. <u>Polemonium acutiflorum</u>	1	No	FAC	
10. <u>Astragalus umbellatus</u>	1	No	NL	
Total Cover: <u>112</u>				
50% of total cover: <u>56</u>		20% of total cover: <u>22.4</u>		
Plot size (radius, or length x width) <u>30 X 30 feet</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>25</u>		
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-13									hor:Oi
13-26	10YR 3/4	100					No	Sandy Loam	hor:C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X					
Type:	None							
Depth (inches):	N/A							
Field Drainage Class:	MWD - Moderately Well Drained							

Remarks: Fibric layer deep but no sapric layer, abrupt edge with mineral layer. Soil does not meet histic epipedon indicator because it is not underlain by mineral soil with chroma 2 or less. Assuming that the organics are not typically saturated during the growing season.  
No indicators.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> FAC-Neutral Test (D5)		

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Saturation Present? (includes capillary fringe)	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No indicators

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7714\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Betula glandulosa	1	No	FAC
Vaccinium oxycoccos	1	No	OBL

Additional Reference Data: Photos

HDR7714\_19



Photo Name: Photo\_190906101531



Photo Name: Photo\_190906101554

## Additional Reference Data: Photos

HDR7714\_19



**Photo Name:** Photo\_190906101523



**Photo Name:** Photo\_190906101517



**Photo Name:** Photo\_190906101538



**Photo Name:** Photo\_190906101548



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>9/6/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR7715_19</u>	
Investigators: <u>MNW, VW</u>	Landform (hillslope, terrace, etc.): <u>Hillside</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): <u>9</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.928364</u>	Long: <u>-155.297104</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Closed Willow Low Shrub (CWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks: <u>Moderate Drought conditions according to the National Drought Mitigation Center.</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				
50% of total cover: <u>0</u>				20% of total cover: <u>0</u>
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix barclayi</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>      </u> Multiply by: OBL species <u>      </u> x1= <u>      </u> FACW species <u>      </u> x2= <u>      </u> FAC species <u>150</u> x3= <u>450</u> FACU species <u>27</u> x4= <u>108</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>177</u> (A) <u>558</u> (B)  Prevalence Index = B/A= <u>3.15</u>
2. <u>Ribes hudsonianum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>90</u>				
50% of total cover: <u>45</u>				20% of total cover: <u>18</u>
<b>Herb Stratum</b>				
1. <u>Equisetum arvense</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
2. <u>Calamagrostis canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Dryopteris expansa</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	
4. <u>Equisetum sylvaticum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
5. <u>Gymnocarpium dryopteris</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
6. <u>Chamaenerion angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>87</u>				
50% of total cover: <u>43.5</u>				20% of total cover: <u>17.4</u>
Plot size (radius, or length x width) <u>40 X 40 feet</u>				% Bare Ground <u>20</u>
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>0</u>		
(Where applicable)				

Remarks: Small fringe of willow between alder and cal can. Does not meet FAC- neutral.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				$\alpha$ - $\alpha$	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-6	10YR 4/3	100						Silt Loam	hor:E With 25% gravels
6-12	10YR 3/3	100						Silt Loam	hor:B1 With cobbles and gravels 50%
12-22	7.5YR 2.5/3	100						Fine Sandy Loam	hor:B2 With gravels 25%
22-24	10YR 4/4	100						Fine Sandy Loam	hor:B With 10% gravels

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: Very dry soil. Too dry to apply alpha alpha.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	_____	No	<u>  X  </u>	Depth (inches):	_____			
Water Table Present?	Yes	_____	No	<u>  X  </u>	Depth (inches):	_____			
Saturation Present?	Yes	_____	No	<u>  X  </u>	Depth (inches):	_____			
(includes capillary fringe)					<b>Wetland Hydrology Present?</b> Yes    _____    No <u>  X  </u>				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No hydrology indicators observed.

Geomorphic Position:



## Additional Reference Data: Photos

HDR7715\_19

**Photo Name:** Photo\_190906114845



**Photo Name:** Photo\_190906114836



**Photo Name:** Photo\_190906114859



## Additional Reference Data: Photos

HDR7715\_19



Photo Name: Photo\_190906114758



Photo Name: Photo\_190906114852



Photo Name: Photo\_190906114822



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 9/6/2019  
 Applicant/Owner: PLP Sampling Point: HDR7716\_19  
 Investigators: MNW, VW Landform (hillslope, terrace, etc.): Hillside  
 Local Relief (concave, convex, none): None Slope(%): 8 HGM: N/A  
 Subregion (LRR): X Lat: 59.928539 Long: -155.297852 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Equisetum (DEST-EQ)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>		
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>		

Remarks: Moderate Drought conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>80</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index Worksheet:</b>				
<u>Sapling/Shrub Stratum</u>		Total % Cover of: <u>      </u> Multiply by:		
1. <u>Empetrum nigrum</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>Vaccinium uliginosum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>7</u> x2= <u>14</u>
3. <u>Rhododendron tomentosum</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	FAC species <u>172</u> x3= <u>516</u>
4. <u>Betula nana</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FACU species <u>21</u> x4= <u>84</u>
5. <u>Salix arctica</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>Salix barclayi</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	Column Totals: <u>200</u> (A) <u>614</u> (B)
Total Cover: <u>119</u>				Prevalence Index = B/A= <u>3.07</u>
50% of total cover: <u>59.5</u>				
20% of total cover: <u>23.8</u>				
<b>Hydrophytic Vegetation Indicators:</b>				
<u>Herb Stratum</u>				X Dominance Test is >50%
1. <u>Equisetum arvense</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index is ≤3.0
2. <u>Carex bigelowii</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
3. <u>Chamaenerion angustifolium</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
4. <u>Calamagrostis canadensis</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>Rubus chamaemorus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
6. <u>Angelica lucida</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
7. <u>Petasites frigidus s.l.</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
8. <u>Bistorta plumosa</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
9. <u>Trientalis europaea</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>81</u>				
50% of total cover: <u>40.5</u>				
20% of total cover: <u>16.2</u>				
Plot size (radius, or length x width) <u>40 X 20 feet</u>				% Bare Ground <u>0</u>
% Cover of Wetland Bryophytes <u>0</u>				% Cover of Bryophytes <u>30</u>
(Where applicable)				

Remarks:



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-5									hor:Oe
5-10	10YR 3/3	100						Fine Sandy Loam	hor:A
10-19	10YR 3/4	100						Sandy Loam	hor:B 10% gravel
19-22	10YR 4/4	100						Silt Loam	hor:B2 10% gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: MWD - Moderately Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: No indicators

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No indicators

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7716\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Vaccinium vitis-idaea</u>	<u>5</u>	<u>No</u>	<u>FAC</u>
<u>Alnus sinuata</u>	<u>2</u>	<u>No</u>	<u>FAC</u>
<u>Arctous alpina</u>	<u>2</u>	<u>No</u>	<u>FACU</u>

Additional Reference Data: Photos

HDR7716\_19

Photo Name: Photo\_190906121613



Photo Name: Photo\_190906121553



## Additional Reference Data: Photos

HDR7716\_19



**Photo Name:** Photo\_190906121625



**Photo Name:** Photo\_190906121631



**Photo Name:** Photo\_190906121619



## Additional Reference Data: Photos

HDR7716\_19

Photo Name: Photo\_190906121541



Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	9/6/2019
Applicant/Owner:	PLP			Sampling Point:	HDR7717_19
Investigators:	MNW, VW	Landform (hillslope, terrace, etc.):	Bench		
Local Relief (concave, convex, none):	Concave	Slope(%):	5	HGM:	Slope
Subregion (LRR):	X	Lat:	59.926567	Long:	-155.294327
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	PSS1/EM1C		

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-10									hor:Oe
10-16	10YR 3/1	95	7.5YR 3/4	5	C	PL	Yes	Silt Loam	hor:A
10-16							Yes	Silt Loam	hor:A
16-19									hor:Oe
19-22	10YR 3/3	98	10YR 5/6	2	C	PL	Yes	Sandy Clay Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			<b>Hydric Soil Present?</b>	Yes	<u>  X  </u>	No	<u>          </u>
Type:	<u>  None  </u>						
Depth (inches):	<u>  N/A  </u>						
Field Drainage Class:	<u>  PD - Poorly Drained  </u>						

Remarks: H2S at 6 inches. Two soil pits were dug at this site. Pit 1: Soil feels very moist, but is not saturated. Assuming soil is saturated for at least two weeks within growing season: histic epipedon. First 2 soil pictures are of Pit 1. Pit 1 profile: 0-6 Oi; 6-8 Oe; 8-15 B1, silty clay loam with 10% cobbles and gravels, 10YR 3/2, redox 5YR 5/8 2% C in matrix, redox 7.5YR 4/6 3% C in PL, 2% C in matrix; 15-24 B2, sandy clay loam with 15% cobbles and gravels, 10YR 4/3. B layers negative for alpha alpha.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input checked="" type="checkbox"/> X	Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> X	Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> X	Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> X Hydrogen Sulfide Odor (C1)		Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input checked="" type="checkbox"/> X	Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> X	Geomorphic Position (D2)	
<input checked="" type="checkbox"/> X Algal Mat or Crust (B4)				Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)				Microtopographic Relief (D4)	
<input checked="" type="checkbox"/> X Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> X	FAC-Neutral Test (D5)	

Field Observations:				Wetland Hydrology Present?	Yes	<u>  X  </u>	No	<u>      </u>
Surface Water Present?	Yes	<u>      </u>	No <u>  X  </u>		Depth (inches):	<u>                    </u>		
Water Table Present?	Yes	<u>      </u>	No <u>  X  </u>		Depth (inches):	<u>                    </u>		
Saturation Present?	Yes	<u>      </u>	No <u>  X  </u>		Depth (inches):	<u>                    </u>		
(includes capillary fringe)								

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Water seems to drain from upslope into plot. Evidence of ponding at site (near Pit 2). Surface soil cracks and algal mat are present. H2S odor at 6 inches in Pit 2.  
  
Geomorphic Position: Bench



## Additional Reference Data: Photos

HDR7717\_19

**Photo Name:** Photo\_190906143929



**Photo Name:** Photo\_190906151419



**Photo Name:** Photo\_190906144010



## Additional Reference Data: Photos

HDR7717\_19



**Photo Name:** Photo\_190906150713



**Photo Name:** Photo\_190906151338



**Photo Name:** Photo\_190906143853



## Additional Reference Data: Photos

HDR7717\_19



**Photo Name:** Photo\_190906150543



**Photo Name:** Photo\_190906143917



**Photo Name:** Photo\_190906143937



Photo Name: Photo\_190906143949



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 9/7/2019  
 Applicant/Owner: PLP Sampling Point: HDR7718\_19  
 Investigators: MW VW Landform (hillslope, terrace, etc.): Kettle  
 Local Relief (concave, convex, none): Concave Slope(%): 0 HGM: N/A  
 Subregion (LRR): X Lat: 59.850357 Long: -154.871506 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open White Spruce Forest (OWSF)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			
Remarks: <u>Moderate Drought conditions according to the National Drought Mitigation Center.</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Picea glauca (tree)</u>	20	Yes	FACU	Number of Dominant Species
2. <u>      </u>				That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>				Total Number of Dominant
4. <u>      </u>				Species Across All Strata: <u>6</u> (B)
Total Cover: <u>20</u>				Percent of Dominant Species
50% of total cover: <u>10</u>		20% of total cover:	<u>4</u>	That Are OBL, FACW, or FAC: <u>67</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Betula nana</u>	30	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u>
2. <u>Salix pulchra</u>	15	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Picea glauca</u>	15	Yes	FACU	FACW species <u>2</u> x2= <u>4</u>
4. <u>Rhododendron tomentosum</u>	10	No	FAC	FAC species <u>92</u> x3= <u>276</u>
5. <u>Vaccinium vitis-idaea</u>	10	No	FAC	FACU species <u>49</u> x4= <u>196</u>
6. <u>Spiraea stevenii</u>	10	No	FACU	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>106</u>				Column Totals: <u>143</u> (A) <u>476</u> (B)
50% of total cover: <u>53</u>		20% of total cover:	<u>21.2</u>	<u>Prevalence Index = B/A=</u> <u>3.33</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	5	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Carex brunnescens</u>	5	Yes	FAC	<u>      </u> Prevalence Index is ≤3.0
3. <u>Rubus arcticus s.l.</u>	2	No	FAC	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Chamaenerion angustifolium</u>	2	No	FACU	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Sanguisorba canadensis</u>	2	No	FACW	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Polemonium acutiflorum</u>	1	No	FAC	
7. <u>      </u>				<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>				must be present, unless disturbed or problematic.
9. <u>      </u>				
10. <u>      </u>				
Total Cover: <u>17</u>				
50% of total cover: <u>8.5</u>		20% of total cover:	<u>3.4</u>	
Plot size (radius, or length x width) <u>40 X 40 feet</u>		% Bare Ground	<u>0</u>	
% Cover of Wetland Bryophytes <u>5</u>		% Cover of Bryophytes	<u>85</u>	
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-2									hor:Oe
2-24	10YR 3/3	100						Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	WD - Well Drained				

Remarks: Soil is moist in top 8 inches due to recent rain. Hummocky area, pit was dug in a low spot.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Saturation Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
(includes capillary fringe)									
					<b>Wetland Hydrology Present?</b>				
					Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No hydrology indicators observed.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR7718\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Empetrum nigrum	5	No	FAC
Vaccinium uliginosum	5	No	FAC
Salix ovalifolia	4	No	FAC
Betula papyrifera s.l.	2	No	FACU

Additional Reference Data: Photos

HDR7718\_19



Photo Name: Photo\_190907104854



Photo Name: Photo\_190907104823

## Additional Reference Data: Photos

HDR7718\_19



**Photo Name:** Photo\_190907104949



**Photo Name:** Photo\_190907104910



**Photo Name:** Photo\_190907104758

## Additional Reference Data: Photos

HDR7718\_19

**Photo Name:** Photo\_190907104936





# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 9/7/2019  
 Applicant/Owner: PLP Sampling Point: HDR7720\_19  
 Investigators: MNW, VW Landform (hillslope, terrace, etc.): Swale  
 Local Relief (concave, convex, none): Concave Slope(%): 6 HGM: N/A  
 Subregion (LRR): X Lat: 59.850365 Long: -154.874405 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Dwarf Birch Shrub (ODBS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Moderate Drought conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant Species Across All Strata: <u>2</u> (B)
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
Total Cover: <u>      </u>				<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>      </u> Multiply by: <u>      </u> OBL species <u>1</u> x1= <u>1</u> FACW species <u>2</u> x2= <u>4</u> FAC species <u>133</u> x3= <u>399</u> FACU species <u>6</u> x4= <u>24</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>142</u> (A) <u>428</u> (B)  Prevalence Index = B/A= <u>3.01</u>
50% of total cover: <u>0</u> 20% of total cover: <u>0</u>				
<b>Sapling/Shrub Stratum</b> 1. <u>Rhododendron tomentosum</u> <u>60</u> <u>Yes</u> <u>FAC</u> 2. <u>Betula nana</u> <u>40</u> <u>Yes</u> <u>FAC</u> 3. <u>Vaccinium vitis-idaea</u> <u>20</u> <u>No</u> <u>FAC</u> 4. <u>Salix barclayi</u> <u>10</u> <u>No</u> <u>FAC</u> 5. <u>Vaccinium uliginosum</u> <u>3</u> <u>No</u> <u>FAC</u> 6. <u>Picea glauca (tree)</u> <u>3</u> <u>No</u> <u>FACU</u> Total Cover: <u>142</u> 50% of total cover: <u>71</u> 20% of total cover: <u>28.4</u>				
<b>Herb Stratum</b> 1. <u>      </u> 2. <u>      </u> 3. <u>      </u> 4. <u>      </u> 5. <u>      </u> 6. <u>      </u> 7. <u>      </u> 8. <u>      </u> 9. <u>      </u> 10. <u>      </u> Total Cover: <u>      </u> 50% of total cover: <u>0</u> 20% of total cover: <u>0</u> Plot size (radius, or length x width) <u>30 X 50 feet</u> % Bare Ground <u>0</u> % Cover of Wetland Bryophytes <u>40</u> (Where applicable) % Cover of Bryophytes <u>80</u>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>

Remarks: Betula kenaica nearby but not included in plot. Less than 5% tree cover, so Picea glauca tree coverage moved to shrub stratum. Less than 5% herb cover, so Rubus chamaemorus moved to shrub stratum.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5									hor:Oi
5-11	2.5Y 4/2	70					No	Silt Loam	hor:A Charcoal
5-11	5Y 2.5/1	30					No	Silt Loam	hor:A Charcoal
11-15	7.5YR 3/3	100						Sandy Loam	hor:B
15-20	10YR 3/4	100						Sandy Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: MWD - Moderately Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: No indicators

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No indicators.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR7720\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Spiraea stevenii</u>	<u>3</u>	<u>No</u>	<u>FACU</u>
<u>Rubus chamaemorus</u>	<u>2</u>	<u>No</u>	<u>FACW</u>
<u>Vaccinium oxycoccos</u>	<u>1</u>	<u>No</u>	<u>OBL</u>

Additional Reference Data: Photos

HDR7720\_19



Photo Name: Photo\_190907120701

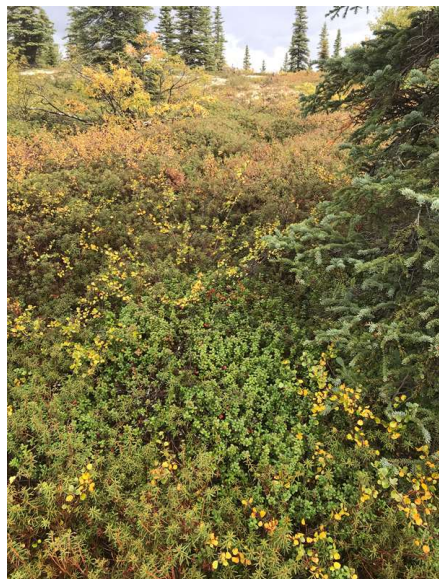


Photo Name: Photo\_190907120655



## Additional Reference Data: Photos

HDR7720\_19



**Photo Name:** Photo\_190907120716



**Photo Name:** Photo\_190907120731



**Photo Name:** Photo\_190907120723

Photo Name: Photo\_190907120737



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 9/7/2019  
 Applicant/Owner: PLP Sampling Point: HDR7725\_19  
 Investigators: MNW, VW Landform (hillslope, terrace, etc.): Swale  
 Local Relief (concave, convex, none): Concave Slope(%): 8 HGM: N/A  
 Subregion (LRR): X Lat: 59.854740 Long: -154.885651 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Dwarf Birch Shrub (ODBS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Moderate Drought conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
<b>Tree Stratum</b>				
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<b>Sapling/Shrub Stratum</b>				
1. <u>Rhododendron tomentosum</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Betula nana</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Spiraea stevenii</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	
4. <u>Vaccinium uliginosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
5. <u>Vaccinium vitis-idaea</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>155</u>				
50% of total cover: <u>77.5</u>		20% of total cover: <u>31</u>		
<b>Herb Stratum</b>				
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
Plot size (radius, or length x width) <u>30 X 50 feet</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>70</u>		% Cover of Bryophytes <u>80</u>		
(Where applicable)				
<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Remarks:



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5									hor:Oi
5-6									hor:Oe
6-9	10YR 2/2	100						Silt Loam	hor:B1
9-11	10YR 4/3	30						Silt Loam	hor:B2 10YR 2/1 is charcoal
9-11	10YR 2/1	70						Silt Loam	hor:B2 10YR 2/1 is charcoal
11-16	10YR 2/1	10						Silt Loam	hor:B 10YR 2/1 is charcoal
11-16	7.5YR 2.5/2	90						Silt Loam	hor:B 10YR 2/1 is charcoal
16-26	5YR 2.5/2	100						Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Soil is dry.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input checked="" type="checkbox"/> X Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Microtopographic Relief (D4)
	<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position: Swale

## Additional Reference Data: Photos

HDR7725\_19



**Photo Name:** Photo\_190907145917



**Photo Name:** Photo\_190907150030

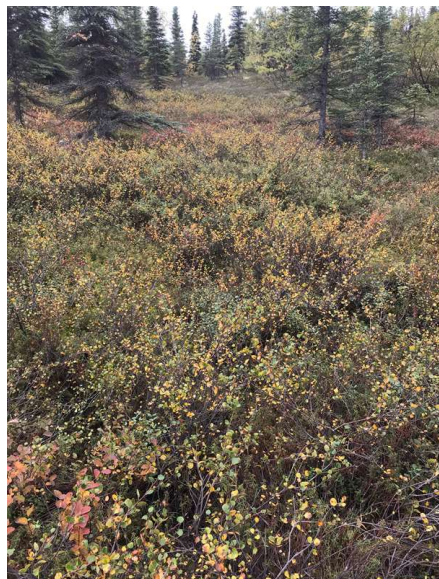


**Photo Name:** Photo\_190907150011



## Additional Reference Data: Photos

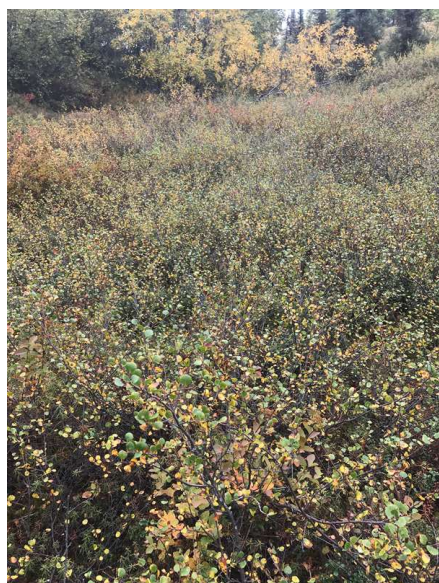
HDR7725\_19



**Photo Name:** Photo\_190907150023



**Photo Name:** Photo\_190907145937



**Photo Name:** Photo\_190907150017



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 9/7/2019  
 Applicant/Owner: PLP Sampling Point: HDR7726\_19  
 Investigators: MNW, VW Landform (hillslope, terrace, etc.): Swale  
 Local Relief (concave, convex, none): Concave Slope(%): 6 HGM: N/A  
 Subregion (LRR): X Lat: 59.855179 Long: -154.885696 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Dwarf Birch Shrub (ODBS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>		
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>		

Remarks: Moderate Drought conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Betula nana</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by: <u>      </u>
2. <u>Vaccinium uliginosum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Rhododendron tomentosum</u>	<u>30</u>	<u>No</u>	<u>FAC</u>	FACW species <u>2</u> x2= <u>4</u>
4. <u>Empetrum nigrum</u>	<u>25</u>	<u>No</u>	<u>FAC</u>	FAC species <u>196</u> x3= <u>588</u>
5. <u>Vaccinium vitis-idaea</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FACU species <u>3</u> x4= <u>12</u>
6. <u>Spiraea stevenii</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>183</u>				Column Totals: <u>201</u> (A) <u>604</u> (B)
50% of total cover: <u>91.5</u>				Prevalence Index = B/A= <u>3.00</u>
20% of total cover: <u>36.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex brunnescens</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Rubus chamaemorus</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Calamagrostis canadensis</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>18</u>				
50% of total cover: <u>9</u>				
20% of total cover: <u>3.6</u>				
Plot size (radius, or length x width) <u>30 X 50 feet</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>40</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>85</u>				<b>Present?</b>
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5									hor:Oi
5-10	10YR 2/1	70					No	Silt Loam	hor:A Charcoal
5-10	10YR 4/3	30					No	Silt Loam	hor:A Charcoal
10-15	10R 2.5/1	100						Silt Loam	hor:B
15-22	5YR 2.5/2	100						Silt Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	MWD - Moderately Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: No indicators

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		X <input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>					
Surface Water Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	X <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	X <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	X <input checked="" type="checkbox"/>	Depth (inches):	
(includes capillary fringe)					
			<b>Wetland Hydrology Present?</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Closed depression. No outlet. No evidence of ponding.

Geomorphic Position: Depression

## Additional Reference Data: Photos

HDR7726\_19



**Photo Name:** Photo\_190907152341



**Photo Name:** Photo\_190907152308



**Photo Name:** Photo\_190907152259



## Additional Reference Data: Photos

HDR7726\_19



**Photo Name:** Photo\_190907152401



**Photo Name:** Photo\_190907152408



**Photo Name:** Photo\_190907152348

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/25/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8001_19</u>	
Investigators: <u>EEC, MNW</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>0</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.867413</u>	Long: <u>-155.064178</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>7</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>71</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Salix pulchra</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Empetrum nigrum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium uliginosum</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>15</u> x2= <u>30</u>
4. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>157</u> x3= <u>471</u>
5. <u>Picea glauca</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	FACU species <u>19</u> x4= <u>76</u>
6. <u>Spiraea beauverdiana</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>145</u>				Column Totals: <u>191</u> (A) <u>577</u> (B)
50% of total cover: <u>72.5</u>				<u>Prevalence Index = B/A=</u> <u>3.02</u>
20% of total cover: <u>29</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Sanguisorba canadensis</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Dominance Test is >50%
2. <u>Iris setosa</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Epilobium angustifolium</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Geranium erianthum</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
5. <u>Calamagrostis canadensis</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Carex bigelowii</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	
7. <u>Festuca altaica</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
8. <u>Achillea millefolium s.l.</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
9. <u>Polemonium acutiflorum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Phleum alpinum</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>47</u>				
50% of total cover: <u>23.5</u>				
20% of total cover: <u>9.4</u>				
Plot size (radius, or length x width) <u>25 X 25 feet</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>10</u>		
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi
2-8	7.5YR 3/3	100					N/A	Loam	hor:A
8-20	10YR 3/4	100					N/A	Sandy Loam	hor:C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes _____ No <u>  X  </u>	
Type:	<u>None</u>		
Depth (inches):	<u>N/A</u>		
Field Drainage Class:	<u>WD - Well Drained</u>		

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed. Plot is located within a swale however well drained soils are present and the feature does not appear to collect water. No channel and no indication of running water.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR8001\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Herb			
Pyrola asarifolia	1	No	FACU
Trientalis europaea	1	No	FACU
Poa sp.	1	No	N/A
Sapling/Shrub			
Vaccinium vitis-idaea	1	No	FAC

Additional Reference Data: Photos

HDR8001\_19



Photo Name: Photo\_190625092719



Photo Name: Photo\_190625092714



Photo Name: Photo\_190625092705



Photo Name: Photo\_190625092644



Photo Name: Photo\_190625092653

## Additional Reference Data: Photos

HDR8001\_19



**Photo Name:** Photo\_190625092629



**Photo Name:** Photo\_190625092637



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/25/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8003_19</u>	
Investigators: <u>EEC, MNW</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>1</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.870926</u>	Long: <u>-155.067139</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index Worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Salix pulchra</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>2</u> x1= <u>2</u>
2. <u>Spiraea beauverdiana</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	FACW species <u>5</u> x2= <u>10</u>
3. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>117</u> x3= <u>351</u>
4. <u>Empetrum nigrum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACU species <u>33</u> x4= <u>132</u>
5. <u>Vaccinium uliginosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>Picea glauca</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	Column Totals: <u>157</u> (A) <u>495</u> (B)
Total Cover: <u>78</u>				<u>Prevalence Index = B/A=</u> <u>3.15</u>
50% of total cover: <u>39</u>				
20% of total cover: <u>15.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Rubus arcticus s.l.</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Prevalence Index is ≤3.0
3. <u>Chamaenerion angustifolium</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Cornus suecica</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Iris setosa</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
7. <u>Dryopteris expansa</u>	<u>4</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Athyrium cyclosorum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Geranium erianthum</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
10. <u>Carex canescens</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	
Total Cover: <u>79</u>				
50% of total cover: <u>39.5</u>				
20% of total cover: <u>15.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>5</u>				
% Cover of Bryophytes <u>15</u>				
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi Ash layer at 1 inch
4-6									hor:Oe
6-10	7.5YR 2.5/2	100					N/A	Loam	hor:B1
10-20	10YR 3/4	100					N/A	Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
Type:   None	
Depth (inches):    N/A	
Field Drainage Class:   MWD - Moderately Well Drained	

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X    Depth (inches):	
Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X    Depth (inches):	
Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X    Depth (inches): (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed. No evidence of ponding in lowest areas within polygon.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR8003\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Vaccinium vitis-idaea</u>	<u>1</u>	<u>No</u>	<u>FAC</u>

Additional Reference Data: Photos

HDR8003\_19



Photo Name: Photo\_190625110404



Photo Name: Photo\_190625110353



## Additional Reference Data: Photos

HDR8003\_19



**Photo Name:** Photo\_190625110517



**Photo Name:** Photo\_190625110423



**Photo Name:** Photo\_190625110458



Photo Name: Photo\_190625110413

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/25/2019  
 Applicant/Owner: PLP Sampling Point: HDR8004\_19  
 Investigators: EEC, MNW Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): Concave Slope(%): 4 HGM: N/A  
 Subregion (LRR): X Lat: 59.870235 Long: -155.096848 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Willow Low Shrub (CWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>	

Remarks:

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Vaccinium uliginosum</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>    </u> Multiply by:
2. <u>Salix pulchra</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>    </u> x1= <u>    </u>
3. <u>Salix alaxensis</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	FACW species <u>7</u> x2= <u>14</u>
4. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>174</u> x3= <u>522</u>
5. <u>Empetrum nigrum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>3</u> x4= <u>12</u>
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	UPL species <u>    </u> x5= <u>    </u>
Total Cover: <u>165</u>				Column Totals: <u>184</u> (A) <u>548</u> (B)
50% of total cover: <u>82.5</u>				Prevalence Index = B/A= <u>2.98</u>
20% of total cover: <u>33</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Sanguisorba canadensis</u>	<u>7</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Dominance Test is >50%
2. <u>Iris setosa</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Calamagrostis canadensis</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Equisetum arvense</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Epilobium angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Pyrola asarifolia</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
7. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover: <u>19</u>				
50% of total cover: <u>9.5</u>				
20% of total cover: <u>3.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>60</u>				
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5									hor:Oe
5-19	7.5YR 2.5/2	100					N/A	Sandy Loam	hor:B/C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: 50% cobbles and gravels starting at 5 inches. Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary hydrology indicators observed.

Geomorphic Position:



**Photo Name:** Photo\_190625134327



**Photo Name:** Photo\_190625134311



**Photo Name:** Photo\_190625134431





**Photo Name:** Photo\_190625134354



**Photo Name:** Photo\_190625134336



**Photo Name:** Photo\_190625134409



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/25/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8005_19</u>	
Investigators: <u>MNW, EEC</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>1</u>	HGM: <u>Lacustrine Fringe</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.871914</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1/EM1C</u>	

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)

Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No     

Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>	
Remarks: <u>Lake fringe</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover:	<u>    </u>			
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>    </u> Multiply by: <u>    </u> OBL species <u>30</u> x1= <u>30</u> FACW species <u>9</u> x2= <u>18</u> FAC species <u>165</u> x3= <u>495</u> FACU species <u>14</u> x4= <u>56</u> UPL species <u>    </u> x5= <u>    </u> Column Totals: <u>218</u> (A) <u>599</u> (B)  Prevalence Index = B/A= <u>2.75</u>
1. <u>Salix pulchra</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Vaccinium uliginosum</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Vaccinium ovalifolium</u>	<u>8</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Spiraea beauverdia</u>	<u>7</u>	<u>No</u>	<u>FACU</u>	
5. <u>Betula glandulosa</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
6. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
Total Cover:	<u>80</u>			
50% of total cover:	<u>40</u>	20% of total cover:	<u>16</u>	
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>75</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% X Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Iris setosa</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	
3. <u>Eriophorum angustifolium</u>	<u>15</u>	<u>No</u>	<u>OBL</u>	
4. <u>Carex podocarpa</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
5. <u>Potentilla palustris</u>	<u>8</u>	<u>No</u>	<u>OBL</u>	
6. <u>Carex aquatilis</u>	<u>7</u>	<u>No</u>	<u>OBL</u>	
7. <u>Rumex arcticus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
8. <u>Epilobium angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
9. <u>Juncus filiformis</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
10. <u>Viola sp.</u>	<u>1</u>	<u>No</u>	<u>N/A</u>	
Total Cover:	<u>139</u>			
50% of total cover:	<u>69.5</u>	20% of total cover:	<u>27.8</u>	
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>5</u>				
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>50</u>		
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oe
2-6	10YR 2/2	100					No	Sandy Loam	hor:A
6-20	5Y 4/2	85	10YR 4/6	15	C	PL M	Yes	Sandy Loam	hor:B *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input checked="" type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			<b>Hydric Soil Present?</b>	Yes	<u>  X  </u>	No	<u>          </u>
Type:	<u>  None  </u>						
Depth (inches):	<u>  N/A  </u>						
Field Drainage Class:	<u>  SPD - Somewhat Poorly Drained  </u>						

Remarks: \*3: Alpha alpha positive starting at 6 inches.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> X	No
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):			
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No <input type="checkbox"/>	Depth (inches):			
Saturation Present? (includes capillary fringe)	Yes	<input checked="" type="checkbox"/> X No <input type="checkbox"/>	Depth (inches):			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Site hydrology influenced by nearby lake.

Geomorphic Position: Lakeshore

Additional Reference Data: Overflow Vegetation

HDR8005\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Empetrum nigrum	5	No	FAC
Betula kenaica	5	No	FACU
Andromeda polifolia	3	No	FACW
Ledum decumbens	2	No	FAC

Additional Reference Data: Photos

HDR8005\_19



Photo Name: Photo\_190625150625



Photo Name: Photo\_190625150603



## Additional Reference Data: Photos

HDR8005\_19



**Photo Name:** Photo\_190625150654



**Photo Name:** Photo\_190625150610



**Photo Name:** Photo\_190625150549

## Additional Reference Data: Photos

HDR8005\_19



**Photo Name:** Photo\_190625150638



**Photo Name:** Photo\_190625150555

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/26/2019</u>
Applicant/Owner: <u>PLP</u>		Sampling Point: <u>HDR8006_19</u>
Investigators: <u>EEC, MNW</u>	Landform (hillslope, terrace, etc.): <u>Terrace</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>4</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.869431</u>	Long: <u>-155.116806</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
	NWI Classification: <u>U</u>	

Vegetation Type: Shrub Birch – Willow (SBW)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
	Total Cover: <u>      </u>			Percent of Dominant Species
	50% of total cover: <u>0</u>	20% of total cover: <u>0</u>		That Are OBL, FACW, or FAC: <u>100</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Betula nana</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Empetrum nigrum</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium uliginosum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>Salix pulchra</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	FAC species <u>171</u> x3= <u>513</u>
5. <u>Ledum decumbens</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>7</u> x4= <u>28</u>
6. <u>Salix alaxensis</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
	Total Cover: <u>178</u>			Column Totals: <u>178</u> (A) <u>541</u> (B)
	50% of total cover: <u>89</u>	20% of total cover: <u>35.6</u>		<u>Prevalence Index = B/A=</u> <u>3.04</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>X</u> Dominance Test is >50%
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Prevalence Index is ≤3.0
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
	Total Cover: <u>      </u>			
	50% of total cover: <u>0</u>	20% of total cover: <u>0</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>      </u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>25</u>				<b>Present?</b>
(Where applicable)				
Remarks:				

Tri. eur. (herb at 1%), Epi. ang. (herb at 1%), and Cal. can. (herb at 2%) moved to shrub stratum due to less than 5% cover in overall herb stratum.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1								Organic	hor:Oi
1-6	7.5YR 3/3	100					N/A	Fine Sandy Loam	hor:A
6-14	10YR 3/4	100					N/A	Fine Sandy Loam	hor:B
14-20	10YR 3/4	100					N/A	Sand	hor:C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
Type:   None	
Depth (inches):    N/A	
Field Drainage Class:    WD - Well Drained	

Remarks: 15% gravels starting at 18 inches. Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X    Depth (inches):	
Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X    Depth (inches):	
Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X    Depth (inches): (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed. Plot located on gentle bench above lake. Current water level of lake is approximately 20 feet below elevation of plot.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR8006\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<i>Spiraea beauverdiana</i>	5	No	FACU
<i>Vaccinium vitis-idaea</i>	4	No	FAC
<i>Calamagrostis canadensis</i>	2	No	FAC
<i>Epilobium angustifolium</i>	1	No	FACU
<i>Trientalis europaea</i>	1	No	FACU

Additional Reference Data: Photos

HDR8006\_19



Photo Name: Photo\_190625162730



Photo Name: Photo\_190625162709



Photo Name: Photo\_190625162714



Photo Name: Photo\_190625162652



Photo Name: Photo\_190625162821



## Additional Reference Data: Photos

HDR8006\_19



**Photo Name:** Photo\_190625162755



**Photo Name:** Photo\_190625162702

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/26/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8007_19</u>	
Investigators: <u>EEC, MNW</u>	Landform (hillslope, terrace, etc.): <u>Swale</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>2</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.866543</u>	Long: <u>-155.109604</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks:	

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		That Are OBL, FACW, or FAC: <u>100</u> (A/B)
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>4</u> <u>Multiply by:</u>
2. <u>Vaccinium uliginosum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>4</u> x1= <u>4</u>
3. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACW species <u>19</u> x2= <u>38</u>
4. <u>Picea glauca</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	FAC species <u>95</u> x3= <u>285</u>
5. <u>Spiraea beauverdiana</u>	<u>4</u>	<u>No</u>	<u>FACU</u>	FACU species <u>11</u> x4= <u>44</u>
6. <u>Vaccinium vitis-idaea</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>86</u>				Column Totals: <u>129</u> (A) <u>371</u> (B)
50% of total cover: <u>43</u>		20% of total cover: <u>17.2</u>		<u>Prevalence Index = B/A=</u> <u>2.88</u>
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Sanguisorba canadensis</u>	<u>18</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Dominance Test is >50%
2. <u>Rubus arcticus s.l.</u>	<u>8</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Iris setosa</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex bigelowii</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Carex canescens</u>	<u>4</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Epilobium angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
7. <u>Festuca altaica</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Pedicularis labradorica</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	must be present, unless disturbed or problematic.
9. <u>      </u>				
10. <u>      </u>				
Total Cover: <u>43</u>				
50% of total cover: <u>21.5</u>		20% of total cover: <u>8.6</u>		
Plot size (radius, or length x width) <u>15 X 15 feet</u>		% Bare Ground <u>0</u>		<b>Hydrophytic</b>
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>35</u>		<b>Vegetation</b>
(Where applicable)				Yes <u>X</u> No <u>      </u>
				<b>Present?</b>

Remarks:

Fairly diverse with small patches of different communities.  
Bryophytes mostly lichen.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi
2-12	7.5YR 3/3	100					N/A	Loam	hor:A
12-20	7.5YR 3/3	100					N/A	Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type:	None	
Depth (inches):	N/A	
Field Drainage Class:	WD - Well Drained	

Remarks: Cobbles and gravels at 25% starting at 12 inches continuing through 20 inches. Soil pit completed in lowest part of polygon. Profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary hydrology indicators observed.

Geomorphic Position:



## Additional Reference Data: Photos

HDR8007\_19



**Photo Name:** Photo\_190626084149



**Photo Name:** Photo\_190626084226



**Photo Name:** Photo\_190626084200



**Photo Name:** Photo\_190626084205



**Photo Name:** Photo\_190626084213



**Photo Name:** Photo\_190626084253

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/26/2019  
 Applicant/Owner: PLP Sampling Point: HDR8009\_19  
 Investigators: EEC; MNW Landform (hillslope, terrace, etc.): Terrace  
 Local Relief (concave, convex, none): Concave Slope(%): 1 HGM: Depressional  
 Subregion (LRR): X Lat: 59.872890 Long: -155.028091 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1C

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>	

Remarks:

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>    3    </u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>    3    </u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>    0    </u>				That Are OBL, FACW, or FAC: <u>    100    </u> (A/B)
20% of total cover: <u>    0    </u>				
<b>Prevalence Index Worksheet:</b>				
<u>Sapling/Shrub Stratum</u>		Total % Cover of: <u>    </u> Multiply by:		
1. <u>Salix alaxensis</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>    </u> x1= <u>    </u>
2. <u>Salix pulchra</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>    </u> x2= <u>    </u>
3. <u>Picea glauca</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	FAC species <u>    182    </u> x3= <u>    546    </u>
4. <u>Viburnum edule</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	FACU species <u>    20    </u> x4= <u>    80    </u>
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	UPL species <u>    </u> x5= <u>    </u>
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Column Totals: <u>    202    </u> (A) <u>    626    </u> (B)
Total Cover: <u>107</u>				Prevalence Index = B/A= <u>    3.10    </u>
50% of total cover: <u>53.5</u>				
20% of total cover: <u>21.4</u>				
<b>Hydrophytic Vegetation Indicators:</b>				
<u>Herb Stratum</u>				X Dominance Test is >50%
1. <u>Calamagrostis canadensis</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index is ≤3.0
2. <u>Equisetum arvense</u>	<u>12</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
3. <u>Streptopus amplexifolius</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
4. <u>Heracleum lanatum</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>Dryopteris expansa</u>	<u>4</u>	<u>No</u>	<u>FACU</u>	
6. <u>Chamaenerion angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
7. <u>Geranium erianthum</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover: <u>95</u>				
50% of total cover: <u>47.5</u>				
20% of total cover: <u>19</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>0</u>				
(Where applicable)				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>    </u>				

Remarks:



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi
2-5							No		hor:Oe
5-7	5Y 4/1	40	7.5YR 4/6	60	C	PL M	No	Clay Loam	hor:A
7-10									hor:Oe
10-12	7.5YR 4/4	20	2.5Y 5/2	80	D	M	No	Clay Loam	hor:B
12-20	7.5YR 4/4	100					No	Sand	hor:C Gravels w/sand

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input checked="" type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>SPD - Somewhat Poorly Drained</u>	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> X	No	
Surface Water Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):				
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):				
Saturation Present? (includes capillary fringe)	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Surface water in swales.

Geomorphic Position: Concave setting on terrace.

## Additional Reference Data: Photos

HDR8009\_19



**Photo Name:** Photo\_190626100022



**Photo Name:** Photo\_190626095914



**Photo Name:** Photo\_190626095859

## Additional Reference Data: Photos

HDR8009\_19



**Photo Name:** Photo\_190626100058



**Photo Name:** Photo\_190626095909



**Photo Name:** Photo\_190626100015



## Additional Reference Data: Photos

HDR8009\_19



**Photo Name:** Photo\_190626100036



**Photo Name:** Photo\_190626095903

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/26/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8010_19</u>	
Investigators: <u>EEC, MNW</u>	Landform (hillslope, terrace, etc.): <u>Shoulder Slope</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>4</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.894203</u>	Long: <u>-154.987900</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: <u>Small open patch of low willow in ericaceous shrub area.</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Ledum decumbens</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Salix pulchra</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Empetrum nigrum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>Vaccinium uliginosum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	FAC species <u>155</u> x3= <u>465</u>
5. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>12</u> x4= <u>48</u>
6. <u>Spiraea beauverdiana</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>167</u>				Column Totals: <u>167</u> (A) <u>513</u> (B)
50% of total cover: <u>83.5</u>				<u>Prevalence Index = B/A=</u> <u>3.07</u>
20% of total cover: <u>33.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>X</u> Dominance Test is >50%
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Prevalence Index is ≤3.0
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				
50% of total cover: <u>0</u>				
20% of total cover: <u>0</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>10</u>				
(Where applicable)				
Remarks: <u>Gym. dry. (herb at 2%) moved to shrub stratum due to less than 5% total cover in herb stratum.</u>				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-5	10YR 5/1	100					N/A	Silt Loam	hor:C Ash.
5-10	7.5YR 2.5/1	100					N/A	Loam	hor:A
10-20	2.5YR 2.5/2	100					N/A	Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes _____ No _____ X _____	
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	MWD - Moderately Well Drained		

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR8010\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Vaccinium vitis-idaea</u>	<u>5</u>	<u>No</u>	<u>FAC</u>
<u>Gymnocarpium dryopteris</u>	<u>2</u>	<u>No</u>	<u>FACU</u>

Additional Reference Data: Photos

HDR8010\_19

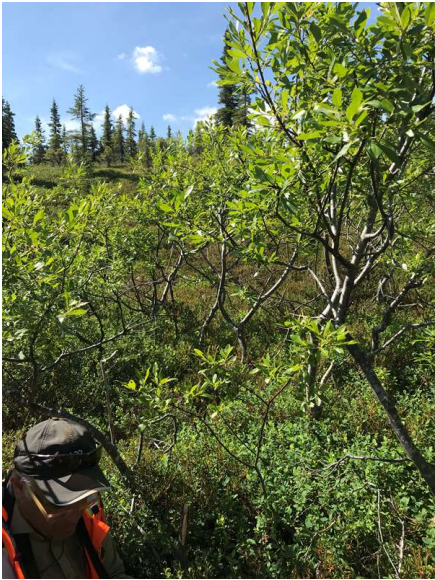


Photo Name: Photo\_190626121904



Photo Name: Photo\_190626121954

## Additional Reference Data: Photos

HDR8010\_19



**Photo Name:** Photo\_190626121853



**Photo Name:** Photo\_190626121858



**Photo Name:** Photo\_190626121911



## Additional Reference Data: Photos

HDR8010\_19



**Photo Name:** Photo\_190626121942



**Photo Name:** Photo\_190626121929



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/26/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8012_19</u>	
Investigators: <u>EEC, MNW</u>	Landform (hillslope, terrace, etc.): <u>Swale</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>1</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.894779</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1/3B</u>	

Vegetation Type: Open Mixed Forest (OMF)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)

Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No     

Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

	Absolute % Cover	Dominant Species?	Indicator Status		
<b>Tree Stratum</b>					
1. <u>Picea glauca (tree)</u>	15	Yes	FACU	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>71</u> (A/B)	
2. <u>Betula papyrifera s.l. (tree)</u>	10	Yes	FACU		
3. <u>    </u>					
4. <u>    </u>					
Total Cover: <u>25</u>				<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>    </u> Multiply by: <u>    </u> OBL species <u>1</u> x1= <u>1</u> FACW species <u>5</u> x2= <u>10</u> FAC species <u>215</u> x3= <u>645</u> FACU species <u>40</u> x4= <u>160</u> UPL species <u>    </u> x5= <u>    </u> Column Totals: <u>261</u> (A) <u>816</u> (B)  <i>Prevalence Index = B/A=</i> <u>3.13</u>	
50% of total cover: <u>12.5</u>		20% of total cover: <u>5</u>			
<b>Sapling/Shrub Stratum</b>					
1. <u>Empetrum nigrum</u>	45	Yes	FAC	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <u>Betula nana</u>	40	Yes	FAC		
3. <u>Vaccinium uliginosum</u>	40	Yes	FAC		
4. <u>Ledum decumbens</u>	35	No	FAC		
5. <u>Salix pulchra</u>	30	No	FAC		
6. <u>Spiraea beauverdiana</u>	15	No	FACU		
Total Cover: <u>216</u>					
50% of total cover: <u>108</u>		20% of total cover: <u>43.2</u>			
<b>Herb Stratum</b>					
1. <u>Equisetum sylvaticum</u>	15	Yes	FAC		<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>    </u>
2. <u>Rubus chamaemorus</u>	5	Yes	FACW		
3. <u>    </u>					
4. <u>    </u>					
5. <u>    </u>					
6. <u>    </u>					
7. <u>    </u>					
8. <u>    </u>					
9. <u>    </u>					
10. <u>    </u>					
Total Cover: <u>20</u>					
50% of total cover: <u>10</u>		20% of total cover: <u>4</u>			
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>					
% Cover of Wetland Bryophytes <u>65</u>		% Cover of Bryophytes <u>70</u>			
(Where applicable)					
Remarks:					

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-6							N/A		hor:Oi
6-8									hor:Oe
8-9	2.5Y 4/2	100					N/A	Silt Loam	hor:C Ash
9-14	10YR 3/2	60	2.5YR 2.5/3	40	C	PL	No	Loamy Fine Sand	hor:A
14-18	7.5YR 3/4	100					N/A	Sand	hor:C
18-19	10YR 3/3	100					N/A	Silt Loam	hor:B
19-20									hor:Oe
20-21	10YR 4/1	100					No	Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:

- ☐ Histosol or Histel (A1)
- ☒ Histic Epipedon (A2)
- ☐ Hydrogen Sulfide (A4)
- ☐ Thick Dark Surface (A12)
- ☐ Alaska Gleyed (A13)
- ☐ Alaska Redox (A14)
- ☐ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ Alaska Color Change (TA4)<sup>4</sup>
- ☐ Alaska Gleyed Without Hue 5Y or Redder
- ☐ Alaska Alpine Swales (TA5)
- ☐ Underlying Layer
- ☐ Alaska Redox With 2.5Y Hue
- ☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

Restrictive Layer (if present):

Type: None

Depth (inches): N/A

Field Drainage Class: PD - Poorly Drained

Hydric Soil Present? Yes ☒ No ☐

Remarks: Soil profile moist throughout, saturated at 19". Likely saturated in upper 12" of soil profile during early part of growing season..

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Dry Season Water Table (C2)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-stained Leaves (B9)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Salt Deposits (C5)
- ☐ Stunted or Stressed Plants (D1)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches):

Water Table Present? Yes ☒ No ☐ Depth (inches): 20.0

Saturation Present? Yes ☒ No ☐ Depth (inches): 19.0

(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Water at 22 inches; came up to 20 inches.

Geomorphic Position: Valley floor

Additional Reference Data: Overflow Vegetation

HDR8012\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Vaccinium vitis-idaea	10	No	FAC
Vaccinium oxycoccos	1	No	OBL

Additional Reference Data: Photos

HDR8012\_19



Photo Name: Photo\_190626140722



Photo Name: Photo\_190626140732



## Additional Reference Data: Photos

HDR8012\_19



**Photo Name:** Photo\_190626140809



**Photo Name:** Photo\_190626140954



**Photo Name:** Photo\_190626140739

## Additional Reference Data: Photos

HDR8012\_19



**Photo Name:** Photo\_190626140941



**Photo Name:** Photo\_190626140748

Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	6/26/2019
Applicant/Owner:	PLP			Sampling Point:	HDR8013_19
Investigators:	MNW, EEC	Landform (hillslope, terrace, etc.):	Toeslope		
Local Relief (concave, convex, none):	Concave	Slope(%):	4	HGM:	Slope
Subregion (LRR):	X	Lat:	59.893982	Long:	-154.978394
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	PSS3/4B		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.) \_\_\_\_\_

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>  X  </u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			

<u>Tree Stratum</u>		Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>		
1.	Picea mariana (tree)	8	Yes	FACW	Number of Dominant Species		
2.					That Are OBL, FACW, or FAC: 6 (A)		
3.					Total Number of Dominant		
4.					Species Across All Strata: 6 (B)		
Total Cover:		8			Percent of Dominant Species		
50% of total cover:		4	20% of total cover:	1.6	That Are OBL, FACW, or FAC: 100 (A/B)		
<u>Sapling/Shrub Stratum</u>					<b>Prevalence Index Worksheet:</b>		
1.	Picea mariana	40	Yes	FACW	<u>Total % Cover of:</u> <u>Multiply by:</u>		
2.	Empetrum nigrum	20	Yes	FAC	OBL species	1	x1= 1
3.	Ledum decumbens	20	Yes	FAC	FACW species	69	x2= 138
4.	Betula nana	12	No	FAC	FAC species	98	x3= 294
5.	Vaccinium uliginosum	5	No	FAC	FACU species	3	x4= 12
6.	Vaccinium vitis-idaea	5	No	FAC	UPL species		x5=
Total Cover:		106			Column Totals:	171 (A)	445 (B)
50% of total cover:		53	20% of total cover:	21.2	<i>Prevalence Index = B/A= 2.60</i>		

Remarks:
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Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-11									hor:Oi
11-16									hor:Oa
16-18	10YR 2/1	100						Silt Loam	hor:A
18-22	2.5Y 3/3	98	2.5Y 4/4	2	CS	PL		Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☒ Histosol or Histel (A1)

☐ Histic Epipedon (A2)

☒ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☐ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder

☐ Underlying Layer

☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  
Type: None  
Depth (inches): N/A  
Field Drainage Class: PD - Poorly Drained

**Hydric Soil Present?**    Yes ☐ No ☒

Remarks: H2S within 12" of ground surface.

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  

☐ Surface Water (A1)

☐ High Water Table (A2)

☐ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☒ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**  

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☐ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☒ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☒ Microtopographic Relief (D4)

☒ FAC-Neutral Test (D5)

**Field Observations:**  
Surface Water Present?    Yes ☐ No ☒    Depth (inches):                       
Water Table Present?    Yes ☐ No ☒    Depth (inches):                       
Saturation Present?    Yes ☐ No ☒    Depth (inches):                       
(includes capillary fringe)

**Wetland Hydrology Present?**    Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Soil profile not saturated but moist enough to produce/retain H2S odor. H2S within 12" of ground surface.

Geomorphic Position: Toeslope

Additional Reference Data: Overflow Vegetation

HDR8013\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Spiraea beauverdiana	3	No	FACU
Vaccinium oxycoccos	1	No	OBL

Additional Reference Data: Photos

HDR8013\_19



Photo Name: Photo\_190626154741



Photo Name: Photo\_190626154646

## Additional Reference Data: Photos

HDR8013\_19



**Photo Name:** Photo\_190626154653



**Photo Name:** Photo\_190626154639



**Photo Name:** Photo\_190626154722



## Additional Reference Data: Photos

HDR8013\_19

**Photo Name:** Photo\_190626154659



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/27/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8014_19</u>	
Investigators: <u>EEC, MNW</u>	Landform (hillslope, terrace, etc.): <u>Valleybottom</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>1</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.892441</u>	Long: <u>-154.979736</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Closed Broadleaf Forest (CBF)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	

Remarks: Terrace along stream floodplain among cottonwoods just below birch tree/ cottonwood dominated forest; which is on edge of spruce dominated forest. Remap stream location based on imagery that maybe wasn't used during initial mapping.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Populus balsamifera (tree)</u>	50	Yes	FACU	Number of Dominant Species
2. <u>Betula papyrifera s.l. (tree)</u>	20	Yes	FACU	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>				Total Number of Dominant
4. <u>      </u>				Species Across All Strata: <u>8</u> (B)
Total Cover: <u>70</u>				Percent of Dominant Species
50% of total cover: <u>35</u>		20% of total cover: <u>14</u>		That Are OBL, FACW, or FAC: <u>62</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Salix pulchra</u>	35	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u>
2. <u>Alnus incana ssp. tenuifolia</u>	15	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Viburnum edule</u>	15	Yes	FACU	FACW species <u>20</u> x2= <u>40</u>
4. <u>Betula papyrifera s.l.</u>	5	No	FACU	FAC species <u>95</u> x3= <u>285</u>
5. <u>Spiraea beauverdana</u>	2	No	FACU	FACU species <u>101</u> x4= <u>404</u>
6. <u>Linnaea borealis</u>	1	No	UPL	UPL species <u>1</u> x5= <u>5</u>
Total Cover: <u>73</u>				Column Totals: <u>217</u> (A) <u>734</u> (B)
50% of total cover: <u>36.5</u>		20% of total cover: <u>14.6</u>		<u>Prevalence Index = B/A=</u> <u>3.38</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	25	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	20	Yes	FACW	<u>      </u> Prevalence Index is ≤3.0
3. <u>Rubus arcticus s.l.</u>	15	Yes	FAC	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Gymnocarpium dryopteris</u>	4	No	FACU	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Polemonium acutiflorum</u>	2	No	FAC	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Streptopus amplexifolius</u>	2	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Thalictrum sparsiflorum</u>	2	No	FACU	
8. <u>Aconitum delphinifolium</u>	1	No	FAC	
9. <u>Lycopodium alpinum</u>	1	No	FACU	
10. <u>Pyrola chlorantha</u>	1	No	FACU	
Total Cover: <u>74</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>37</u>		20% of total cover: <u>14.8</u>		
Plot size (radius, or length x width) <u>20 X 30 feet</u>		% Bare Ground <u>5</u>		
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>25</u>		
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5									hor:Oi
5-6									hor:Oa
6-9	7.5YR 3/2	100					N/A	Silt Loam	hor:A
9-10							N/A		hor:Oe
10-20	7.5YR 3/2	100					N/A	Sand	hor:C Coarse gravels at 40%
20-22	7.5YR 3/2	100						Sand	hor:C Fine gravels 40%

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Soil horizons indicate fluvial deposition occurred many years ago. Soil profile dry throughout, moist starting at 20".

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Microtopographic Relief (D4)
	<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Plot located on stream's floodplain terrace but it is not an active floodplain and does not get regularly flooded.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR8014\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Trientalis europaea	1	No	FACU

Additional Reference Data: Photos

HDR8014\_19



Photo Name: Photo\_190627091347



Photo Name: Photo\_190627091407

## Additional Reference Data: Photos

HDR8014\_19



**Photo Name:** Photo\_190627091422



**Photo Name:** Photo\_190627091335



**Photo Name:** Photo\_190627091340



## Additional Reference Data: Photos

HDR8014\_19



**Photo Name:** Photo\_190627091351



**Photo Name:** Photo\_190627091412



Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	6/27/2019
Applicant/Owner:	PLP			Sampling Point:	HDR8016_19
Investigators:	EEC, MNW	Landform (hillslope, terrace, etc.):	Valleybottom		
Local Relief (concave, convex, none):	None	Slope(%):	2	HGM:	Slope
Subregion (LRR):	X	Lat:	59.893204	Long:	-154.978333
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	PFO1B		

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation: X Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>  X  </u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks:					

Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status
1.	Betula papyrifera s.l. (tree)	25	Yes	FACU
2.	Picea glauca (tree)	15	Yes	FACU
3.				
4.				
Total Cover:		40		
50% of total cover:		20	20% of total cover:	8
Sapling/Shrub Stratum				
1.	Vaccinium vitis-idaea	40	Yes	FAC
2.	Betula papyrifera s.l.	20	Yes	FACU
3.	Salix pulchra	10	No	FAC
4.	Spiraea beauverdiana	5	No	FACU
5.	Vaccinium uliginosum	2	No	FAC
6.				
Total Cover:		77		
50% of total cover:		38.5	20% of total cover:	15.4
Herb Stratum				
1.	Equisetum arvense	65	Yes	FAC
2.	Rubus arcticus s.l.	10	No	FAC
3.	Dryopteris expansa	10	No	FACU
4.	Sanguisorba canadensis	10	No	FACW
5.	Lycopodium annotinum s.l.	5	No	FACU
6.	Gymnocarpium dryopteris	4	No	FACU
7.	Cornus suecica	1	No	FAC
8.	Rubus chamaemorus	1	No	FACW
9.	Rumex arcticus	1	No	FACW
10.				
Total Cover:		107		
50% of total cover:		53.5	20% of total cover:	21.4
Plot size (radius, or length x width) 1/10 acre		% Bare Ground		0
% Cover of Wetland Bryophytes 50		% Cover of Bryophytes		80
(Where applicable)				

### Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

### Prevalence Index Worksheet:

Total % Cover of: Multiply by:

OBL species	x1=
FACW species 12	x2= 24
FAC species 128	x3= 384
FACU species 84	x4= 336
UPL species	x5=
Column Totals: 224 (A)	744 (B)

Prevalence Index = B/A= 3.32

### Hydrophytic Vegetation Indicators:

Dominance Test is >50%

Prevalence Index is ≤3.0

X Morphological Adaptations<sup>1</sup> (Provide data in Remarks or on a separate sheet)

X Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

### Hydrophytic Vegetation Present?

Yes X No

Remarks:
Plot located near a groundwater seep. Most of the open mixed forest is upland but wetland conditions persist near the seeps. Plant community does not technically meet the criteria but may be skewed by the roots of birch and white spruce also in adjacent upland. A lot of sphagnum in plot also contributing to the deep organic layer observed in the soil pit. Paper birch in plot are stressed and stunted.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-7									hor:Oi
7-8									hor:Oa
8-14	10YR 2/1	100					Yes	Sandy Loam	hor:A *3
14-17	7.5YR 3/3	100						Sand	hor:C
17-20	7.5YR 4/3	100					Yes	Sand	hor:C2 Faint pink alpha alpha.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			<b>Hydric Soil Present?</b>	Yes	<u>  X  </u>	No	<u>          </u>
Type:	<u>  None  </u>						
Depth (inches):	<u>  N/A  </u>						
Field Drainage Class:	<u>  SPD - Somewhat Poorly Drained  </u>						

Remarks: Pit located upslope from seep, located on flat terrace between flowing seep; just downslope from plot the seep forms small stream and becomes more incised. \*3: Lots of gravels/organics. Faint pink alpha alpha.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> X	No	
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No <input type="checkbox"/>	Depth (inches):		12.0		
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No <input type="checkbox"/>	Depth (inches):		4.0		
(includes capillary fringe)							

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Alpha alpha positive within 12" of ground surface. Bet pap trees are stunted and stressed.

Geomorphic Position:

## Additional Reference Data: Photos

HDR8016\_19



**Photo Name:** Photo\_190627105230



**Photo Name:** Photo\_190627105215



**Photo Name:** Photo\_190627105208



## Additional Reference Data: Photos

HDR8016\_19



**Photo Name:** Photo\_190627131720



**Photo Name:** Photo\_190627131714



**Photo Name:** Photo\_190627105220

## Additional Reference Data: Photos

HDR8016\_19



**Photo Name:** Photo\_190627105246



**Photo Name:** Photo\_190627105203

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/27/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8017_19</u>	
Investigators: <u>EEC, MNW</u>	Landform (hillslope, terrace, etc.): <u>Valleybottom</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>1</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.892941</u>	Long: <u>-154.978195</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Mixed Forest (OMF)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>      </u> No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks:	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Picea glauca (tree)</u>	35	Yes	FACU	Number of Dominant Species
2. <u>Betula kenaica (tree)</u>	10	Yes	FACU	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>				Total Number of Dominant
4. <u>      </u>				Species Across All Strata: <u>8</u> (B)
Total Cover: <u>45</u>				Percent of Dominant Species
50% of total cover: <u>22.5</u>				That Are OBL, FACW, or FAC: <u>38</u> (A/B)
20% of total cover: <u>9</u>				<b>Prevalence Index Worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u>
1. <u>Betula kenaica</u>	20	Yes	FACU	<u>Multiply by:</u>
2. <u>Linnaea borealis</u>	15	Yes	UPL	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium vitis-idaea</u>	10	Yes	FAC	FACW species <u>3</u> x2= <u>6</u>
4. <u>Spiraea beauverdana</u>	10	Yes	FACU	FAC species <u>132</u> x3= <u>396</u>
5. <u>Viburnum edule</u>	8	No	FACU	FACU species <u>138</u> x4= <u>552</u>
6. <u>Empetrum nigrum</u>	7	No	FAC	UPL species <u>15</u> x5= <u>75</u>
Total Cover: <u>82</u>				Column Totals: <u>288</u> (A) <u>1029</u> (B)
50% of total cover: <u>41</u>				<u>Prevalence Index = B/A=</u> <u>3.57</u>
20% of total cover: <u>16.4</u>				<b>Hydrophytic Vegetation Indicators:</b>
<u>Herb Stratum</u>				Dominance Test is >50%
1. <u>Equisetum arvense</u>	60	Yes	FAC	Prevalence Index is ≤3.0
2. <u>Rubus pedatus</u>	30	Yes	FAC	Morphological Adaptations <sup>1</sup> (Provide
3. <u>Lycopodium annotinum s.l.</u>	25	No	FACU	data in Remarks or on a separate sheet)
4. <u>Calamagrostis canadensis</u>	10	No	FAC	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>Rubus arcticus s.l.</u>	8	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. <u>Dryopteris expansa</u>	8	No	FACU	
7. <u>Epilobium angustifolium</u>	5	No	FACU	
8. <u>Gymnocarpium dryopteris</u>	5	No	FACU	
9. <u>Pyrola secunda</u>	5	No	FACU	
10. <u>Sanguisorba canadensis</u>	3	No	FACW	
Total Cover: <u>161</u>				
50% of total cover: <u>80.5</u>				
20% of total cover: <u>32.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>75</u>		
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-8	10YR 4/3	100					N/A	Sandy Loam	hor:A
8-20	10YR 4/4	100					N/A	Loamy Sand	hor:C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes _____ No <u>  X  </u>	
Type:	<u>None</u>		
Depth (inches):	<u>N/A</u>		
Field Drainage Class:	<u>WD - Well Drained</u>		

Remarks: 20% gravels below in mineral horizons. Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input type="checkbox"/> FAC-Neutral Test (D5)		

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Surface Water Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> X			
Water Table Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> X			
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> X			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR8017\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
<u>Trientalis europaea</u>	<u>2</u>	<u>No</u>	<u>FACU</u>
<b>Sapling/Shrub</b>			
<u>Ribes glandulosum</u>	<u>7</u>	<u>No</u>	<u>FAC</u>
<u>Picea glauca</u>	<u>5</u>	<u>No</u>	<u>FACU</u>

Additional Reference Data: Photos

HDR8017\_19



Photo Name: Photo\_190627122240



Photo Name: Photo\_190627121557

## Additional Reference Data: Photos

HDR8017\_19



**Photo Name:** Photo\_190627121553



**Photo Name:** Photo\_190627121540



**Photo Name:** Photo\_190627121547



**Photo Name:** Photo\_190627121450



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/27/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8019_19</u>	
Investigators: <u>EEC, MNW</u>	Landform (hillslope, terrace, etc.): <u>Valleybottom</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>1</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.895897</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>U</u>	

Vegetation Type: Closed Broadleaf Forest (CBF)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Betula papyrifera s.l. (tree)</u>	75	Yes	FACU	Number of Dominant Species
2. <u>Picea glauca (tree)</u>	5	No	FACU	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>				Total Number of Dominant
4. <u>      </u>				Species Across All Strata: <u>5</u> (B)
Total Cover: <u>80</u>				Percent of Dominant Species
50% of total cover: <u>40</u>		20% of total cover: <u>16</u>		That Are OBL, FACW, or FAC: <u>60</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Salix pulchra</u>	20	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Spiraea beauverdiana</u>	5	No	FACU	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium vitis-idaea</u>	2	No	FAC	FACW species <u>18</u> x2= <u>36</u>
4. <u>Picea glauca</u>	2	No	FACU	FAC species <u>54</u> x3= <u>162</u>
5. <u>      </u>				FACU species <u>127</u> x4= <u>508</u>
6. <u>      </u>				UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>29</u>				Column Totals: <u>199</u> (A) <u>706</u> (B)
50% of total cover: <u>14.5</u>		20% of total cover: <u>5.8</u>		<u>Prevalence Index = B/A=</u> <u>3.55</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Gymnocarpium dryopteris</u>	35	Yes	FACU	<u>X</u> Dominance Test is >50%
2. <u>Equisetum sylvaticum</u>	25	Yes	FAC	<u>      </u> Prevalence Index is ≤3.0
3. <u>Sanguisorba canadensis</u>	18	Yes	FACW	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Equisetum arvense</u>	5	No	FAC	data in Remarks or on a separate sheet)
5. <u>Trientalis europaea</u>	5	No	FACU	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Rubus arcticus s.l.</u>	2	No	FAC	
7. <u>      </u>				
8. <u>      </u>				
9. <u>      </u>				
10. <u>      </u>				
Total Cover: <u>90</u>				
50% of total cover: <u>45</u>		20% of total cover: <u>18</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>15</u>		
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>25</u>		
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi
2-4									hor:Oe
4-7	7.5YR 3/2	95	5YR 3/3	5	C	PL	N/A	Silt Loam	hor:A
7-7									hor:Oe Buried O horizon 7" to 7.5"
7-9	10YR 3/2	100					N/A	Silt Loam	hor:Ab 7.5 to 9.5
9-10									hor:Oe *6
10-12	10YR 3/2	100					N/A	Sandy Loam	hor:B
12-13							N/A	Loamy Sand	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

Restrictive Layer (if present):	Hydric Soil Present?
Type: <input type="checkbox"/> None	Yes <input type="checkbox"/> No <input type="checkbox"/> X
Depth (inches): <input type="checkbox"/> N/A	
Field Drainage Class: <input type="checkbox"/> MWD - Moderately Well Drained	

Remarks: Soil profile moist but not saturated. Moist enough for alpha alpha starting at 19" which was positive. \*6: Buried O horizon from 9.5" to 10"

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Marl Deposits (B15)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Dry Season Water Table (C2)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:	Wetland Hydrology Present?
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches): <input type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches): <input type="checkbox"/>	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches): <input type="checkbox"/>	
(includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed. Alpha alpha positive but not within the upper 12 inches of the soil profile.

Geomorphic Position:



# ADDITIONAL REFERENCE DATA: SOIL OVERFLOW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
12 - 13	2.5YR 3/6	100					N/A	Loamy Sand	hor:B
13 - 14	10YR 3/2	100					N/A	Sandy Loam	hor:B
14 - 18	10YR 4/2	90	7.5YR 3/3	10	C	M	N/A	Silt Loam	hor:B
14 - 14									hor:Oe Buried O horizon from 14" to 14.5"
18 - 19									hor:Oe Buried O horizon from 18.5" to 19"
19 - 23	10Y 4/1	60	5YR 4/6	40	C		Yes	Silty Clay Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

## Additional Reference Data: Photos

HDR8019\_19



Photo Name: Photo\_190627140601



Photo Name: Photo\_190627140538

## Additional Reference Data: Photos

HDR8019\_19



**Photo Name:** Photo\_190627140546



**Photo Name:** Photo\_190627140526



**Photo Name:** Photo\_190627140618



## Additional Reference Data: Photos

HDR8019\_19



**Photo Name:** Photo\_190627140532



**Photo Name:** Photo\_190627140520



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/28/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8023_19</u>	
Investigators: <u>EEC, MNW</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>4</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.895298</u>	Long: <u>-154.961288</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Dwarf Birch – Ericaceous Shrub Bog (ODBESB)</u>		NWI Classification: <u>PSS1B</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: <u>Seep channels cross polygon</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index Worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Betula nana</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>3</u> x1= <u>3</u>
2. <u>Empetrum nigrum</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>12</u> x2= <u>24</u>
3. <u>Vaccinium uliginosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>167</u> x3= <u>501</u>
4. <u>Ledum decumbens</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	FACU species <u>10</u> x4= <u>40</u>
5. <u>Salix pulchra</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>Picea glauca</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	Column Totals: <u>192</u> (A) <u>568</u> (B)
Total Cover: <u>147</u>				<u>Prevalence Index = B/A=</u> <u>2.96</u>
50% of total cover: <u>73.5</u>				<b>Hydrophytic Vegetation Indicators:</b>
20% of total cover: <u>29.4</u>				<u>X</u> Dominance Test is >50%
<u>Herb Stratum</u>				<u>X</u> Prevalence Index is ≤3.0
1. <u>Carex bigelowii</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
2. <u>Equisetum arvense</u>	<u>8</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
3. <u>Rubus chamaemorus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4. <u>Eriophorum vaginatum</u>	<u>4</u>	<u>No</u>	<u>FACW</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. <u>Equisetum sylvaticum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
6. <u>Luzula parviflora</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
7. <u>Rubus arcticus s.l.</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
8. <u>Juncus filiformis</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	<b>Hydrophytic Vegetation</b> Yes <u>X</u> No <u>      </u> <b>Present?</b>
9. <u>Pedicularis labradorica</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
10. <u>Rumex arcticus</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
Total Cover: <u>46</u>				
50% of total cover: <u>23</u>				
20% of total cover: <u>9.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>40</u>		% Cover of Bryophytes <u>50</u>		
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-16									hor:Oi
16-26	10YR 2/2	100							hor:A

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.    <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils<sup>3</sup>:

<input checked="" type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

Restrictive Layer (if present):

Type: None

Depth (inches): N/A

Field Drainage Class: PD - Poorly Drained

Hydric Soil Present?    Yes    ☒    No    ☐

Remarks: H2S at 17"

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (minimum of one required; check all that apply)

☐ Surface Water (A1)

☒ High Water Table (A2)

☒ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☐ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

Water-stained Leaves (B9)

Drainage Patterns (B10)

Oxidized Rhizospheres along Living Roots (C3)

Presence of Reduced Iron (C4)

Salt Deposits (C5)

Stunted or Stressed Plants (D1)

☒ Geomorphic Position (D2)

Shallow Aquitard (D3)

Microtopographic Relief (D4)

☒ FAC-Neutral Test (D5)

Field Observations:

Wetland Hydrology Present?

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water table currently at 16" but is seeping in at 12". H2S at 17 - not within 12' of ground surface.

Geomorphic Position: Toeslope

Additional Reference Data: Overflow Vegetation

HDR8023\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
Poa sp.	1	No	N/A
Drosera rotundifolia	1	No	OBL
Pinquicula villosa	1	No	OBL
<b>Sapling/Shrub</b>			
Spiraea beauverdiana	5	No	FACU
Vaccinium oxycoccos	1	No	OBL

Additional Reference Data: Photos

HDR8023\_19



Photo Name: Photo\_190627163219



Photo Name: Photo\_190627163236



## Additional Reference Data: Photos

HDR8023\_19



**Photo Name:** Photo\_190627163151



**Photo Name:** Photo\_190627163202



**Photo Name:** Photo\_190627163224

## Additional Reference Data: Photos

HDR8023\_19



**Photo Name:** Photo\_190627163247



**Photo Name:** Photo\_190627163207



**Photo Name:** Photo\_190627163253

## Additional Reference Data: Photos

HDR8023\_19

Photo Name: Photo\_190627164337





# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/28/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8024_19</u>	
Investigators: <u>MNW, EEC</u>	Landform (hillslope, terrace, etc.): <u>Terrace</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>0</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.847378</u>	Long: <u>-154.790466</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
		NWI Classification: <u>PSS1C</u>

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)

Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No     

Are Vegetation:      Soil X or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>    </u>
Hydric Soil Present? Yes <u>X</u> No <u>    </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>    </u>	
Remarks: <u>Source of water and reason for high water now not obvious. Perhaps influenced by beaver dam upstream.</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

	Absolute % Cover	Dominant Species?	Indicator Status	
<u>Tree Stratum</u>				<b>Dominance Test Worksheet:</b>
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		That Are OBL, FACW, or FAC: <u>100</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Betula nana</u>	30	Yes	FAC	<u>Total % Cover of:</u> <u>    </u> <u>Multiply by:</u> <u>    </u>
2. <u>Vaccinium uliginosum</u>	20	Yes	FAC	OBL species <u>    </u> x1= <u>    </u>
3. <u>Empetrum nigrum</u>	15	Yes	FAC	FACW species <u>15</u> x2= <u>30</u>
4. <u>Arctostaphylos alpina</u>	10	No	FAC	FAC species <u>143</u> x3= <u>429</u>
5. <u>Ledum decumbens</u>	8	No	FAC	FACU species <u>12</u> x4= <u>48</u>
6. <u>Salix arctica</u>	8	No	FAC	UPL species <u>11</u> x5= <u>55</u>
Total Cover: <u>116</u>				Column Totals: <u>181</u> (A) <u>562</u> (B)
50% of total cover: <u>58</u>		20% of total cover: <u>23.2</u>		<u>Prevalence Index = B/A=</u> <u>3.10</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	25	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	15	Yes	FAC	<u>    </u> Prevalence Index is ≤3.0
3. <u>Carex saxatilis</u>	10	No	FACW	<u>    </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Arnica frigida</u>	8	No	NL	data in Remarks or on a separate sheet)
5. <u>Hierochloe alpina</u>	3	No	NL	<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Lupinus nootkatensis</u>	2	No	FACU	
7. <u>Epilobium angustifolium</u>	1	No	FACU	
8. <u>Trientalis europaea</u>	1	No	FACU	
9. <u>    </u>				
10. <u>    </u>				
Total Cover: <u>65</u>				
50% of total cover: <u>32.5</u>		20% of total cover: <u>13</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>35</u>		
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>15</u>		
(Where applicable)				
Remarks:				
Bare ground=unvegetated water. No bare ground above water, most of water is unvegetated (gravel and cobble substrate). Pic. gla. (tree at 2%) moved to shrub stratum due to less than 5% overall cover in the tree stratum.				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-8	7.5YR 3/2	100					Yes	Sandy Loam	hor:A
8-20	10YR 3/2	100					Yes	Sandy Clay Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input checked="" type="checkbox"/> X	Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>SPD - Somewhat Poorly Drained</u>	

Remarks: Positive alpha alpha at 6 inches and at 9 inches; water at 11 inches; saturated soils at 7 inches. Problematic hydric soil. Has hydrophytic vegetation, multiple primary hydrology indicators, appropriate landscape setting and positive alpha alpha.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/>	Water-stained Leaves (B9)	
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> X	Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/>	Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input checked="" type="checkbox"/> X	Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> X	Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/>	Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)			<input checked="" type="checkbox"/> X	Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/>	FAC-Neutral Test (D5)	

Field Observations:						Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> X	No
Surface Water Present?	Yes	<input checked="" type="checkbox"/> X	No	Depth (inches):	12.0				
Water Table Present?	Yes	<input checked="" type="checkbox"/> X	No	Depth (inches):	10.0				
Saturation Present? (includes capillary fringe)	Yes	<input checked="" type="checkbox"/> X	No	Depth (inches):	7.0				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water level appears to have risen within the last month in this location: Vac. uli. leaves are currently underwater and are turning black.

Surface water in hollows approximately 12-inches deep. Plot soil pit dug on hummock.

Geomorphic Position: Toeslope

Additional Reference Data: Overflow Vegetation

HDR8024\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Salix pulchra	7	No	FAC
Vaccinium vitis-idaea	5	No	FAC
Picea glauca	5	No	FACU
Andromeda polifolia	5	No	FACW
Picea glauca (tree)	2	No	FACU
Dryas integrifolia	1	No	FACU

Additional Reference Data: Photos

HDR8024\_19



Photo Name: Photo\_190628140441



Photo Name: Photo\_190628134054



## Additional Reference Data: Photos

HDR8024\_19



**Photo Name:** Photo\_190628140339



**Photo Name:** Photo\_190628150309



**Photo Name:** Photo\_190628134033

## Additional Reference Data: Photos

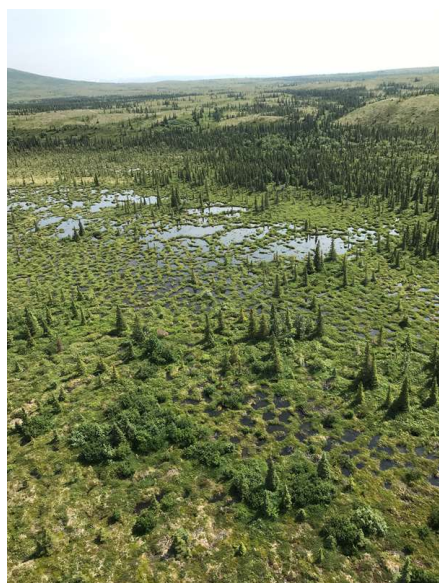
HDR8024\_19



**Photo Name:** Photo\_190628150405



**Photo Name:** Photo\_190628140350



**Photo Name:** Photo\_190628153231



## Additional Reference Data: Photos

HDR8024\_19



**Photo Name:** Photo\_190628153207



**Photo Name:** Photo\_190628134107



**Photo Name:** Photo\_190628150326



## Additional Reference Data: Photos

HDR8024\_19



**Photo Name:** Photo\_190628140405



**Photo Name:** Photo\_190628140427



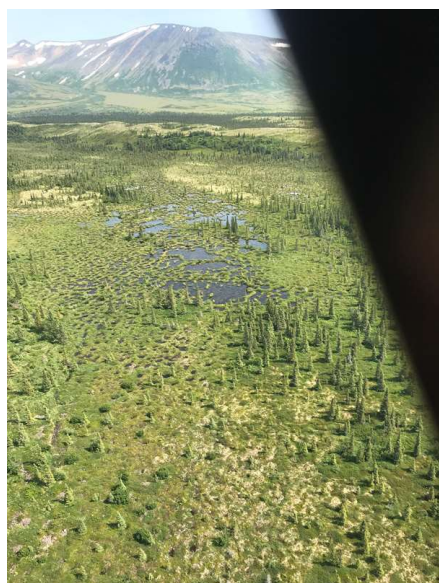
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## Additional Reference Data: Photos

HDR8024\_19



**Photo Name:** Photo\_190628153221



**Photo Name:** Photo\_190628153248

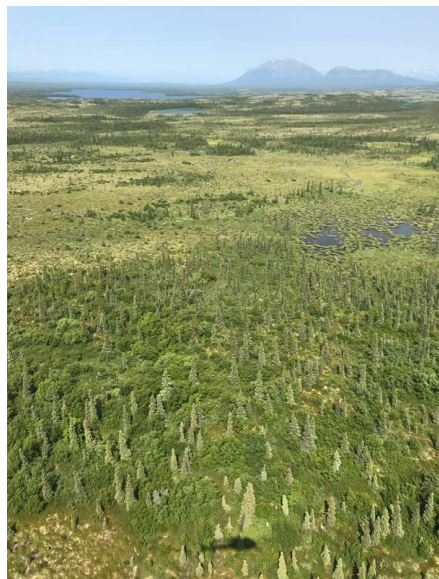


**Photo Name:** Photo\_190628134038



## Additional Reference Data: Photos

HDR8024\_19



**Photo Name:** Photo\_190628153303



**Photo Name:** Photo\_190628134047



**Photo Name:** Photo\_190628134042



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/28/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8025_19</u>	
Investigators: <u>EEC, MNW</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>2</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.835007</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS3/1B</u>	

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Carex (DEST-C)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil X or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		

Remarks: Gradual slope from nearby Roadhouse Mountain. Adjacent polygon is PUB/PEM1C.

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b><u>Tree Stratum</u></b>				<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		That Are OBL, FACW, or FAC: <u>100</u> (A/B)
<b><u>Sapling/Shrub Stratum</u></b>				<b>Prevalence Index Worksheet:</b>
1. <u>Ledum decumbens</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Betula nana</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix pulchra</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>Vaccinium vitis-idaea</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>155</u> x3= <u>465</u>
5. <u>Arctostaphylos alpina</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACU species <u>6</u> x4= <u>24</u>
6. <u>Spiraea beauverdiana</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>125</u>				Column Totals: <u>161</u> (A) <u>489</u> (B)
50% of total cover: <u>62.5</u>		20% of total cover: <u>25</u>		<u>Prevalence Index = B/A=</u> <u>3.04</u>
<b><u>Herb Stratum</u></b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Epilobium angustifolium</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	<u>      </u> Prevalence Index is ≤3.0
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>36</u>				
50% of total cover: <u>18</u>		20% of total cover: <u>7.2</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>35</u>		
(Where applicable)				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-6									hor:Oe
6-14	2.5YR 2.5/1	100					Yes	Silt Loam	hor:A
14-21	10YR 3/2	97	5YR 3/4	3	C	PL	Yes	Sandy Clay Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  
☐ Histosol or Histel (A1)  
☐ Histic Epipedon (A2)  
☐ Hydrogen Sulfide (A4)  
☐ Thick Dark Surface (A12)  
☐ Alaska Gleyed (A13)  
☐ Alaska Redox (A14)  
☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  
☐ Alaska Color Change (TA4)<sup>4</sup>  
☐ Alaska Alpine Swales (TA5)  
☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder  
☐ Underlying Layer  
☒ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.  
<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  
Type: None  
Depth (inches): N/A  
Field Drainage Class: SPD - Somewhat Poorly Drained

**Hydric Soil Present?**    Yes    ☒    No    ☐

Remarks: Positive alpha alpha test at both mineral horizons below organics. Problematic hydric soil - hydrophytic vegetation, multiple primary indicators of primary hydrology, appropriate landscape setting, and positive alpha alpha within the upper 12 inches.

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  
☐ Surface Water (A1)  
☒ High Water Table (A2)  
☒ Saturation (A3)  
☐ Water Marks (B1)  
☐ Sediment Deposits (B2)  
☐ Drift Deposits (B3)  
☐ Algal Mat or Crust (B4)  
☐ Iron Deposits (B5)  
☐ Surface Soil Cracks (B6)  
☐ Inundation Visible on Aerial Imagery (B7)  
☐ Sparsely Vegetated Concave Surface (B8)  
☐ Marl Deposits (B15)  
☐ Hydrogen Sulfide Odor (C1)  
☐ Dry Season Water Table (C2)  
☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**  
☐ Water-stained Leaves (B9)  
☐ Drainage Patterns (B10)  
☐ Oxidized Rhizospheres along Living Roots (C3)  
☒ Presence of Reduced Iron (C4)  
☐ Salt Deposits (C5)  
☐ Stunted or Stressed Plants (D1)  
☒ Geomorphic Position (D2)  
☐ Shallow Aquitard (D3)  
☐ Microtopographic Relief (D4)  
☐ FAC-Neutral Test (D5)

**Field Observations:**  
Surface Water Present?    Yes    ☐    No    ☒    Depth (inches):                       
Water Table Present?    Yes    ☒    No    ☐    Depth (inches):           12.0            
Saturation Present?    Yes    ☒    No    ☐    Depth (inches):           8.0            
(includes capillary fringe)

**Wetland Hydrology Present?**    Yes    ☒    No    ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Surface water in hummock depressions nearby but outside of plot.  
  
Geomorphic Position: Bottom of fan of Roadhouse Mountain; footslope

## Additional Reference Data: Photos

HDR8025\_19



**Photo Name:** Photo\_190628161531



**Photo Name:** Photo\_190628165738



**Photo Name:** Photo\_190628161851



## Additional Reference Data: Photos

HDR8025\_19



**Photo Name:** Photo\_190628161439



**Photo Name:** Photo\_190628161443



**Photo Name:** Photo\_190628165550

## Additional Reference Data: Photos

HDR8025\_19



**Photo Name:** Photo\_190628161454



**Photo Name:** Photo\_190628165732



**Photo Name:** Photo\_190628161522



## Additional Reference Data: Photos

HDR8025\_19



**Photo Name:** Photo\_190628161506



**Photo Name:** Photo\_190628161435



**Photo Name:** Photo\_190628165744





Photo Name: Photo\_190628162534



Photo Name: Photo\_190628161447

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/29/2019</u>
Applicant/Owner: <u>PLP</u>		Sampling Point: <u>HDR8026_19</u>
Investigators: <u>EEC, MNW</u>	Landform (hillslope, terrace, etc.):	<u>Outwash Plain</u>
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>1</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u> Lat: <u>59.822540</u>	Long: <u>-154.753113</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification:	<u>PSS1C</u>

Vegetation Type: Open Dwarf Birch – Ericaceous Shrub Bog (ODBESB)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Vaccinium uliginosum</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Ledum decumbens</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix pulchra</u>	<u>25</u>	<u>No</u>	<u>FAC</u>	FACW species <u>2</u> x2= <u>4</u>
4. <u>Betula nana</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	FAC species <u>174</u> x3= <u>522</u>
5. <u>Dasiphora fruticosa</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FACU species <u>5</u> x4= <u>20</u>
6. <u>Spiraea beauverdiana</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>167</u>				Column Totals: <u>181</u> (A) <u>546</u> (B)
50% of total cover: <u>83.5</u>				Prevalence Index = B/A= <u>3.02</u>
20% of total cover: <u>33.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Saussurea angustifolia</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Thalictrum alpinum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Coeloglossum viride</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	data in Remarks or on a separate sheet)
5. <u>Rumex arcticus</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>14</u>				<b>Hydrophytic Vegetation Present?</b>  Yes <u>X</u> No <u>      </u>
50% of total cover: <u>7</u>				
20% of total cover: <u>2.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Cover of Wetland Bryophytes <u>15</u>				
(Where applicable)				
% Cover of Bryophytes <u>20</u>				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-12									hor:Oe
12-13	7.5YR 4/2	100						Silt Loam	hor:A
13-21	2.5YR 2.5/1	100					Yes	Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>SPD - Somewhat Poorly Drained</u>	

Remarks: Cobbles and small boulders starting below 12".

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input checked="" type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> X Geomorphic Position (D2)		
<input checked="" type="checkbox"/> X Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> X	No	
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
Water Table Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
Saturation Present? (includes capillary fringe)	Yes	<input checked="" type="checkbox"/> X <input type="checkbox"/> No	Depth (inches):	15.0			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Soil saturated at 15 inches. Positive alpha alpha at 13".

Geomorphic Position: Concave area on outwash plain.



Additional Reference Data: Overflow Vegetation

HDR8026\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Salix reticulata	2	No	FAC

Additional Reference Data: Photos

HDR8026\_19



Photo Name: Photo\_190629120337



Photo Name: Photo\_190629120305

## Additional Reference Data: Photos

HDR8026\_19



**Photo Name:** Photo\_190629120312



**Photo Name:** Photo\_190629120258



**Photo Name:** Photo\_190629121109

## Additional Reference Data: Photos

HDR8026\_19



**Photo Name:** Photo\_190629120254



**Photo Name:** Photo\_190629120320



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/29/2019  
 Applicant/Owner: PLP Sampling Point: HDR8028\_19  
 Investigators: EEC, MNW Landform (hillslope, terrace, etc.): Swale  
 Local Relief (concave, convex, none): Concave Slope(%): 3 HGM: N/A  
 Subregion (LRR): X Lat: 59.825603 Long: -154.754547 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra (DEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>	

Remarks: Plot located on fringe of willow lined swale. There is an incised dry channel within the willows.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index Worksheet:</b>				
Total % Cover of:		Multiply by:		
OBL species	<u>    </u>	x1=	<u>    </u>	
FACW species	<u>1</u>	x2=	<u>2</u>	
FAC species	<u>159</u>	x3=	<u>477</u>	
FACU species	<u>2</u>	x4=	<u>8</u>	
UPL species	<u>    </u>	x5=	<u>    </u>	
Column Totals:	<u>162</u> (A)		<u>487</u> (B)	
Prevalence Index = B/A=				<u>3.01</u>
<b>Hydrophytic Vegetation Indicators:</b>				
X Dominance Test is >50%				
Prevalence Index is ≤3.0				
Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)				
Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>    </u>				

Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Vaccinium uliginosum</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Empetrum nigrum</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Arctostaphylos alpina</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	
4. <u>Ledum decumbens</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	
5. <u>Vaccinium vitis-idaea</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
6. <u>Salix arctica</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>148</u>				
50% of total cover: <u>74</u>				
20% of total cover: <u>29.6</u>				
<b>Herb Stratum</b>				
1. <u>Carex bigelowii</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Calamagrostis canadensis</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
3. <u>Equisetum arvense</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
4. <u>Rubus chamaemorus</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
7. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover: <u>14</u>				
50% of total cover: <u>7</u>				
20% of total cover: <u>2.8</u>				
Plot size (radius, or length x width) <u>20 X 30 feet</u>				% Bare Ground <u>0</u>
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>15</u>		
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-7									hor:Oe
7-12	10YR 2/1	100					N/A	Silt Loam	hor:A
12-14	10YR 4/3	100					N/A	Silt Loam	hor:B
14-23	7.5YR 2.5/2	100					N/A	Silt Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Soil profile dry throughout, too dry for alpha alpha test. No hydric soil indicators observed.

Soil pit located on 3% slope adjacent to a very steep (10 to 15% slope) lichen dominated tundra. Area may receive local runoff but the swale drains within a defined and incised channel some distance from the plot.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary or secondary hydrology indicators observed. Plot located on upper reaches of large swale.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Betula nana	5	No	FAC
Salix pulchra	3	No	FAC
Picea glauca	2	No	FACU

Additional Reference Data: Photos

HDR8028\_19



Photo Name: Photo\_190629133149



Photo Name: Photo\_190629133158



## Additional Reference Data: Photos

HDR8028\_19



**Photo Name:** Photo\_190629133103



**Photo Name:** Photo\_190629133204



**Photo Name:** Photo\_190629133143

Photo Name: Photo\_190629133118



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/29/2019  
 Applicant/Owner: PLP Sampling Point: HDR8030\_19  
 Investigators: EEC, MNW Landform (hillslope, terrace, etc.): Swale  
 Local Relief (concave, convex, none): Concave Slope(%): 3 HGM: Slope  
 Subregion (LRR): X Lat: 59.825691 Long: -154.755020 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Open Dwarf Birch Shrub (ODBS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil X or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>			
Remarks:					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Betula nana</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>    </u> Multiply by:
2. <u>Vaccinium uliginosum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>    </u> x1= <u>    </u>
3. <u>Alnus incana ssp. tenuifolia</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FACW species <u>2</u> x2= <u>4</u>
4. <u>Ledum decumbens</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>148</u> x3= <u>444</u>
5. <u>Salix pulchra</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>7</u> x4= <u>28</u>
6. <u>Picea glauca</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	UPL species <u>1</u> x5= <u>5</u>
Total Cover: <u>134</u>				Column Totals: <u>158</u> (A) <u>481</u> (B)
50% of total cover: <u>67</u>				Prevalence Index = B/A= <u>3.04</u>
20% of total cover: <u>26.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Trientalis europaea</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus chamaemorus</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	data in Remarks or on a separate sheet)
5. <u>Equisetum sylvaticum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Festuca altaica</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
7. <u>Artemisia arctica</u>	<u>1</u>	<u>No</u>	<u>NL</u>	
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover: <u>24</u>				
50% of total cover: <u>12</u>				
20% of total cover: <u>4.8</u>				
Plot size (radius, or length x width) <u>20 X 20 feet</u>				<b>Hydrophytic</b>
% Bare Ground <u>5</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>    </u>
% Cover of Bryophytes <u>35</u>				<b>Present?</b>
(Where applicable)				

Remarks:  
 Hummocky with some alder, willow, and spruce present.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5									hor:Oi
5-7									hor:Oe
7-10	10YR 2/1	100					Yes	Silt Loam	hor:A
10-12	10YR 4/2	100					Yes	Silt Loam	hor:B1
12-15	5YR 2.5/1	85	2.5YR 2.5/3	15	C	PL	Yes	Silt Loam	hor:B2 *5
15-19	10YR 3/2	100					Yes	Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input checked="" type="checkbox"/>	Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	SPD - Somewhat Poorly Drained		
		<b>Hydric Soil Present?</b>	Yes <u>  X  </u> No <u>      </u>

Remarks: Soil profile not saturated but moist enough for alpha alpha test. Positive alpha alpha test in all mineral layers. Problematic hydric soil - hydrophytic vegetation, multiple primary hydrology indicators, appropriate landscape setting, and positive alpha alpha test. \*5: Mostly cobbles and gravels, barely any soil

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/>	Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/>	Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/>	Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/>	Marl Deposits (B15)	<input checked="" type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/>	Hydrogen Sulfide Odor (C1)	<input type="checkbox"/>	Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/>	Dry Season Water Table (C2)	<input type="checkbox"/>	Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/>	Other (Explain in Remarks)	<input checked="" type="checkbox"/>	Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/>		<input type="checkbox"/>	Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/>		<input type="checkbox"/>	Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/>		<input type="checkbox"/>	Microtopographic Relief (D4)	
			<input type="checkbox"/>	FAC-Neutral Test (D5)	

Field Observations:					
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
(includes capillary fringe)			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Earlier year's plot data shows flooded swale.

Remarks:
Currently no inundation or saturation but evidence of inundation (water marks) from previous growing season observed.
Geomorphic Position: Swale

Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Salix arctica	2	No	FAC
Vaccinium vitis-idaea	2	No	FAC
Spiraea beauverdiana	2	No	FACU

Additional Reference Data: Photos

HDR8030\_19



Photo Name: Photo\_190629140804



Photo Name: Photo\_190629140736

## Additional Reference Data: Photos

HDR8030\_19



**Photo Name:** Photo\_190629140750



**Photo Name:** Photo\_190629140743



**Photo Name:** Photo\_190629141116



## Additional Reference Data: Photos

HDR8030\_19



**Photo Name:** Photo\_190629140732



**Photo Name:** Photo\_190629140728

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/29/2019</u>
Applicant/Owner: <u>PLP</u>		Sampling Point: <u>HDR8031_19</u>
Investigators: <u>EEC, MNW</u>	Landform (hillslope, terrace, etc.): <u>Outwash Plain</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>2</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u> Lat: <u>59.827736</u>	Long: <u>-154.765579</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS3/1C</u>	

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Carex (DEST-C)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No        (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil X or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>		
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No <u>      </u>		
Remarks:		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
<u>Tree Stratum</u>				Number of Dominant Species
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Percent of Dominant Species
Total Cover: <u>      </u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		<b>Prevalence Index Worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Empetrum nigrum</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>Vaccinium uliginosum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
3. <u>Ledum decumbens</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FAC species <u>141</u> x3= <u>423</u>
4. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
5. <u>Vaccinium vitis-idaea</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	UPL species <u>2</u> x5= <u>10</u>
6. <u>Arctostaphylos alpina</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	Column Totals: <u>143</u> (A) <u>433</u> (B)
Total Cover: <u>106</u>				<u>Prevalence Index = B/A=</u> <u>3.03</u>
50% of total cover: <u>53</u>		20% of total cover: <u>21.2</u>		<b>Hydrophytic Vegetation Indicators:</b>
<u>Herb Stratum</u>				<u>X</u> Dominance Test is >50%
1. <u>Carex bigelowii</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index is ≤3.0
2. <u>Hierochloe alpina</u>	<u>2</u>	<u>No</u>	<u>NL</u>	Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>37</u>				
50% of total cover: <u>18.5</u>		20% of total cover: <u>7.4</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>10</u>		
% Cover of Wetland Bryophytes <u>25</u>		% Cover of Bryophytes <u>45</u>		
(Where applicable)				

Remarks:

Vegetation growing on hummocks with bottom of hollows with rock. Sphagnum growing on rocks in depressions that are currently mostly dry with some standing water observed.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-5									hor:Oe
5-8	7.5YR 3/3	100					Yes	Sandy Loam	hor:A
8-20	7.5YR 3/3	100					Yes	Sandy Loam	hor:B/C *4

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input checked="" type="checkbox"/> X	Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>SPD - Somewhat Poorly Drained</u>	

Remarks: Positive alpha alpha on all mineral soil horizons. Problematic hydric soil - hydrophytic vegetation, multiple primary hydology indicators, appropriate landscape setting and positive alpha alpha. \*4: Mostly rocks and cobbles from 8" to 20" with very little soil.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/>	Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> X	Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>	Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/>	Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/>	Marl Deposits (B15)	<input checked="" type="checkbox"/> X	Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/>	Hydrogen Sulfide Odor (C1)	<input type="checkbox"/>	Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/>	Dry Season Water Table (C2)	<input type="checkbox"/>	Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/>	Other (Explain in Remarks)	<input checked="" type="checkbox"/> X	Geomorphic Position (D2)	
<input checked="" type="checkbox"/> X Algal Mat or Crust (B4)			<input type="checkbox"/>	Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/>	Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/>	FAC-Neutral Test (D5)	

Field Observations:				Wetland Hydrology Present?      Yes <u>  X  </u> No <u>          </u>					
Surface Water Present?	Yes	<u>          </u>	No <u>      X      </u>					Depth (inches):	<u>  </u>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No saturation but likely saturated earlier in the growing season. Surface layers very moist. Sphagnum and filamentous algal mats in hollows  
  
Geomorphic Position: Concave setting within outwash plain.



Additional Reference Data: Overflow Vegetation

HDR8031\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Salix arctica	4	No	FAC
Salix pulchra	4	No	FAC

Additional Reference Data: Photos

HDR8031\_19



Photo Name: Photo\_190629152523



Photo Name: Photo\_190629152541

## Additional Reference Data: Photos

HDR8031\_19



**Photo Name:** Photo\_190629152453



**Photo Name:** Photo\_190629152445



**Photo Name:** Photo\_190629152514



## Additional Reference Data: Photos

HDR8031\_19



**Photo Name:** Photo\_190629152532



**Photo Name:** Photo\_190629152508



**Photo Name:** Photo\_190629152550



Photo Name: Photo\_190629152459



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/30/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8032_19</u>	
Investigators: <u>EEC, MNW</u>	Landform (hillslope, terrace, etc.): <u>Outwash Plain</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>0</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.838539</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1C</u>	

Vegetation Type: Open Dwarf Birch Shrub (ODBS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)

Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No     

Are Vegetation:      Soil X or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Betula nana</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>5</u> <u>Multiply by:</u> <u>5</u>
2. <u>Empetrum nigrum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>5</u> x1= <u>5</u>
3. <u>Vaccinium uliginosum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>1</u> x2= <u>2</u>
4. <u>Ledum decumbens</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FAC species <u>100</u> x3= <u>300</u>
5. <u>Potentilla fruticosa</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACU species <u>2</u> x4= <u>8</u>
6. <u>Salix arctica</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	UPL species <u>2</u> x5= <u>10</u>
Total Cover: <u>82</u>				Column Totals: <u>110</u> (A) <u>325</u> (B)
50% of total cover: <u>41</u>				<u>Prevalence Index = B/A=</u> <u>2.95</u>
20% of total cover: <u>16.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>17</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Trichophorum caespitosum</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Calamagrostis canadensis</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<u>    </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Festuca rubra</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<u>    </u> data in Remarks or on a separate sheet)
5. <u>Carex saxatilis</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Artemisia arctica</u>	<u>1</u>	<u>No</u>	<u>NL</u>	
7. <u>Lagotis glauca s.l.</u>	<u>1</u>	<u>No</u>	<u>NL</u>	
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover: <u>28</u>				
50% of total cover: <u>14</u>				
20% of total cover: <u>5.6</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>20</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>    </u>
% Cover of Bryophytes <u>10</u>				<b>Present?</b>
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4	10YR 4/4	100					N/A	Sandy Loam	hor:B1
4-8	10YR 4/4	95	7.5YR 4/4	5	C	PL	Yes	Sandy Loam	hor:B2
8-12	10YR 4/4	100					Yes	Sandy Loam	hor:B
12-18	10YR 4/4	100					N/A	Sandy Loam	hor:B/C Approximately 50% gravels
18-22	10YR 4/3	100					N/A	Coarse Sand	hor:C Approximately 15% gravels

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☐ Histosol or Histel (A1)

☐ Histic Epipedon (A2)

☐ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☐ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder

☐ Underlying Layer

☒ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  
Type:   
Depth (inches):   
Field Drainage Class:

**Hydric Soil Present?**    Yes ☐    No ☒

Remarks: Profile not saturated but moist enough for alpha alpha test beginning at 4". Problematic hydric soil - hydrophytic vegetation, multiple primary hydrology indicators, appropriate landscape setting, positive alpha alpha test from 4" to 12", and low organic material content (very sandy conditions).

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  

☐ Surface Water (A1)

☐ High Water Table (A2)

☐ Saturation (A3)

☒ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☒ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☒ Surface Soil Cracks (B6)

☒ Inundation Visible on Aerial Imagery (B7)

☒ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☐ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**  

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☒ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☒ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☒ Microtopographic Relief (D4)

☒ FAC-Neutral Test (D5)

**Field Observations:**  
Surface Water Present?    Yes ☐    No ☒    Depth (inches):   
Water Table Present?    Yes ☐    No ☒    Depth (inches):   
Saturation Present?    Yes ☐    No ☒    Depth (inches):   
(includes capillary fringe)

**Wetland Hydrology Present?**    Yes ☒    No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appears that the area floods regularly during the growing season due to the obligate vegetation within the hollows, water marks, and several other primary indicators. Water lines visible on edge of hummocks.

Geomorphic Position: Concave setting on outwash plain.



Additional Reference Data: Overflow Vegetation

HDR8032\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Salix glauca	5	No	FAC
Salix pulchra	5	No	FAC
Picea glauca	2	No	FACU

Additional Reference Data: Photos

HDR8032\_19



Photo Name: Photo\_190629162014



Photo Name: Photo\_190629162022



**Photo Name:** Photo\_190629162006



**Photo Name:** Photo\_190629162110



**Photo Name:** Photo\_190629162048

## Additional Reference Data: Photos

HDR8032\_19



**Photo Name:** Photo\_190629162010



**Photo Name:** Photo\_190629162002



Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	6/30/2019
Applicant/Owner:	PLP			Sampling Point:	HDR8033_19
Investigators:	EEC, MNW	Landform (hillslope, terrace, etc.):	Terrace		
Local Relief (concave, convex, none):	Convex	Slope(%):	1	HGM:	N/A
Subregion (LRR):	X	Lat:	59.887367	Long:	-154.909088
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

<u>Tree Stratum</u>		Absolute % Cover	Dominant Species?	Indicator Status
1.	Picea glauca (tree)	8	Yes	FACU
2.				
3.				
4.				
Total Cover:		8		
50% of total cover:		4	20% of total cover:	1.6
<u>Sapling/Shrub Stratum</u>				
1.	Empetrum nigrum	40	Yes	FAC
2.	Ledum decumbens	40	Yes	FAC
3.	Betula nana	15	No	FAC
4.	Betula glandulosa	10	No	FAC
5.	Vaccinium uliginosum	10	No	FAC
6.	Betula papyrifera s.l.	10	No	FACU
Total Cover:		143		
50% of total cover:		71.5	20% of total cover:	28.6

**Dominance Test Worksheet:**

Number of Dominant Species

That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

**Prevalence Index Worksheet:**

Total % Cover of: Multiply by:

OBL species x1=

FACW species x2=

FAC species 130 x3= 390

FACU species 21 x4= 84

UPL species x5=

Column Totals: 151 (A) 474 (B)

*Prevalence Index = B/A= 3.14*

Herb Stratum					Hydrophytic Vegetation Indicators:	
1.					X	Dominance Test is >50%
2.						Prevalence Index is ≤3.0
3.						Morphological Adaptations <sup>1</sup> (Provide
4.						data in Remarks or on a separate sheet)
5.						Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6.						
7.						
8.						
9.						
10.						
Total Cover: _____						
50% of total cover: _____ 0					20% of total cover: _____ 0	
Plot size (radius, or length x width) _____ 25 X 25 feet					% Bare Ground _____ 0	
% Cover of Wetland Bryophytes _____ 0					% Cover of Bryophytes _____ 60	
(Where applicable)						
					<b>Hydrophytic Vegetation Present?</b> Yes <u>  X  </u> No <u>      </u>	

Remarks:
Cal. can. (herb at 1%) moved to shrub stratum due to less than 5% total cover in the herb stratum.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-5									hor:Oe
5-6	7.5YR 4/1	100					No	Fine Sandy Loam	hor:C Ash
6-9	5YR 2.5/2	100					No	Loamy Fine Sand	hor:A
9-12	10YR 4/4	100					No	Loamy Fine Sand	hor:B/C
12-22	5Y 4/3	100					No	Loamy Coarse	hor:C Lots of gravels, various sizes

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: WD - Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary or secondary hydrology indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR8033\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Vaccinium vitis-idaea	8	No	FAC
Salix glauca	5	No	FAC
Spiraea beauverdiana	3	No	FACU
Arctostaphylos alpina	1	No	FAC
Calamagrostis canadensis	1	No	FAC

Additional Reference Data: Photos

HDR8033\_19



Photo Name: Photo\_190630082720



Photo Name: Photo\_190630082658





**Photo Name:** Photo\_190630082703



**Photo Name:** Photo\_190630082713



**Photo Name:** Photo\_190630082742

## Additional Reference Data: Photos

HDR8033\_19



**Photo Name:** Photo\_190630083350



**Photo Name:** Photo\_190630082708

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 6/30/2019  
 Applicant/Owner: PLP Sampling Point: HDR8034\_19  
 Investigators: EEC, MNW Landform (hillslope, terrace, etc.): Terrace  
 Local Relief (concave, convex, none): Concave Slope(%): 0 HGM: Depressional  
 Subregion (LRR): X Lat: 59.887177 Long: -154.909164 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS4/3B

Vegetation Type: Black Spruce Woodland (BSW)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)  
 Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No       
 Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>	

Remarks:

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Picea mariana (tree)</u>	10	Yes	FACW	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)
2. <u>    </u>				Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. <u>    </u>				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. <u>    </u>				
Total Cover: <u>10</u>				
50% of total cover: <u>5</u>		20% of total cover: <u>2</u>		
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	30	Yes	FAC	<u>Total % Cover of:</u> <u>1</u> <u>Multiply by:</u> <u>1</u>
2. <u>Ledum decumbens</u>	30	Yes	FAC	OBL species <u>1</u> x1= <u>1</u>
3. <u>Picea mariana</u>	20	Yes	FACW	FACW species <u>31</u> x2= <u>62</u>
4. <u>Salix pulchra</u>	15	No	FAC	FAC species <u>101</u> x3= <u>303</u>
5. <u>Vaccinium vitis-idaea</u>	10	No	FAC	FACU species <u>12</u> x4= <u>48</u>
6. <u>Betula papyrifera s.l.</u>	10	No	FACU	UPL species <u>    </u> x5= <u>    </u>
Total Cover: <u>135</u>				Column Totals: <u>145</u> (A) <u>414</u> (B)
50% of total cover: <u>67.5</u>		20% of total cover: <u>27</u>		<i>Prevalence Index = B/A = 2.86</i>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>    </u>				<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>    </u>				<input checked="" type="checkbox"/> Prevalence Index is ≤3.0
3. <u>    </u>				<input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)
4. <u>    </u>				<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>    </u>				
6. <u>    </u>				
7. <u>    </u>				
8. <u>    </u>				
9. <u>    </u>				
10. <u>    </u>				
Total Cover: <u>    </u>				
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>40</u>		% Cover of Bryophytes <u>60</u>		
(Where applicable)				

Remarks:



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-8									hor:Oi
8-10									hor:Oe
10-18	10YR 3/2	35	7.5YR 3/4	5	C	PL	No	Silt Loam	hor:A
10-18	5YR 4/3	60					No	Silt Loam	hor:A
18-26	10YR 4/4	100					No	Loamy Fine Sand	hor:C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	SPD - Somewhat Poorly Drained				

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> X	Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/>	Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/>	Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/>	Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/>	Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> X	Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/>	Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)			<input checked="" type="checkbox"/> X	Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> X	FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	No	<input checked="" type="checkbox"/> X	Depth (inches):	
Water Table Present?	Yes	No	<input checked="" type="checkbox"/> X	Depth (inches):	
Saturation Present?	Yes	No	<input checked="" type="checkbox"/> X	Depth (inches):	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Concave setting and proximity to pond suggest soil profile is likely saturated in the upper 12 inches during normal conditions.

Geomorphic Position: Adjacent to pond

Additional Reference Data: Overflow Vegetation

HDR8034\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Betula glandulosa	8	No	FAC
Betula nana	5	No	FAC
Vaccinium uliginosum	3	No	FAC
Spiraea beauverdiana	2	No	FACU
Andromeda polifolia	1	No	FACW
Vaccinium oxycoccos	1	No	OBL

Additional Reference Data: Photos

HDR8034\_19



Photo Name: Photo\_190630094332



Photo Name: Photo\_190630094417

## Additional Reference Data: Photos

HDR8034\_19



**Photo Name:** Photo\_190630094406



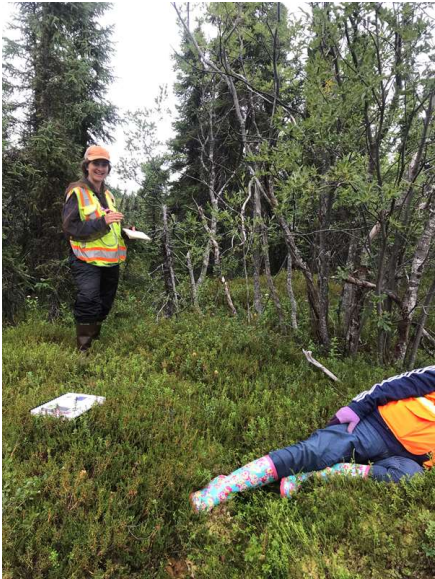
**Photo Name:** Photo\_190630094324



**Photo Name:** Photo\_190630094432



Photo Name: Photo\_190630094424



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>6/30/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8038_19</u>	
Investigators: <u>EEC, MNW</u>	Landform (hillslope, terrace, etc.): <u>Shoulder Slope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>3</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.810085</u>	Long: <u>-154.649658</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Mixed Forest (OMF)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If No, explain in Remarks)

Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No     

Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u>	No <u>X</u>	
Remarks:			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Betula papyrifera s.l. (tree)</u>	15	Yes	FACU	Number of Dominant Species
2. <u>Picea glauca (tree)</u>	15	Yes	FACU	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>    </u>				Total Number of Dominant
4. <u>    </u>				Species Across All Strata: <u>5</u> (B)
Total Cover: <u>30</u>				Percent of Dominant Species
50% of total cover: <u>15</u>		20% of total cover: <u>6</u>		That Are OBL, FACW, or FAC: <u>60</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Ledum decumbens</u>	40	Yes	FAC	<u>Total % Cover of:</u> <u>    </u> <u>Multiply by:</u> <u>    </u>
2. <u>Salix pulchra</u>	25	Yes	FAC	OBL species <u>    </u> x1= <u>    </u>
3. <u>Empetrum nigrum</u>	20	No	FAC	FACW species <u>2</u> x2= <u>4</u>
4. <u>Betula papyrifera s.l.</u>	15	No	FACU	FAC species <u>116</u> x3= <u>348</u>
5. <u>Vaccinium uliginosum</u>	5	No	FAC	FACU species <u>60</u> x4= <u>240</u>
6. <u>Vaccinium vitis-idaea</u>	4	No	FAC	UPL species <u>    </u> x5= <u>    </u>
Total Cover: <u>111</u>				Column Totals: <u>178</u> (A) <u>592</u> (B)
50% of total cover: <u>55.5</u>		20% of total cover: <u>22.2</u>		<u>Prevalence Index = B/A=</u> <u>3.33</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	20	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Epilobium angustifolium</u>	5	No	FACU	<u>    </u> Prevalence Index is ≤3.0
3. <u>Geranium erianthum</u>	4	No	FACU	<u>    </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Gymnocarpium dryopteris</u>	4	No	FACU	<u>    </u> data in Remarks or on a separate sheet)
5. <u>Calamagrostis canadensis</u>	2	No	FAC	<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Sanguisorba canadensis</u>	2	No	FACW	
7. <u>    </u>				<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>    </u>				must be present, unless disturbed or problematic.
9. <u>    </u>				
10. <u>    </u>				
Total Cover: <u>37</u>				
50% of total cover: <u>18.5</u>		20% of total cover: <u>7.4</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>5</u>		
% Cover of Wetland Bryophytes <u>40</u>		% Cover of Bryophytes <u>60</u>		
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-4									hor:Oe
4-8	5YR 3/2	90	5YR 4/4	10	C	PL		Silt Loam	hor:A
8-10	5YR 3/2	95	5YR 4/4	5	C	PL	Yes	Silt Loam	hor:A2
10-14	7.5YR 3/3	80	2.5YR 3/6	20	C	PL	Yes	Silt Loam	hor:B1
14-20	5Y 5/3	85	2.5YR 3/6	15	C	PL	Yes	Silt Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

<b>Hydric Soil Indicators:</b>	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: <input type="checkbox"/> None	
Depth (inches): <input type="checkbox"/> N/A	
Field Drainage Class: <input type="checkbox"/> MWD - Moderately Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Faint positive alpha alpha test on mineral layers

HYDROLOGY

<b>Wetland Hydrology Indicators:</b>	<i>Secondary Indicators (2 or more required)</i>
Primary Indicators (minimum of one required; check all that apply)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>	
Surface Water Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/> Depth (inches): <input type="checkbox"/>	
Water Table Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/> Depth (inches): <input type="checkbox"/>	
Saturation Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/> Depth (inches): <input type="checkbox"/>	
(includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Only one secondary hydrology indicator observed. Saturated plateau upslope from plot drains to distinct stream channels through the mixed forest habitat. Streams do not appear to influence the plot by flooding the area.
Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR8038\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Spiraea beauverdiana</u>	<u>2</u>	<u>No</u>	<u>FACU</u>

Additional Reference Data: Photos

HDR8038\_19



Photo Name: Photo\_190630142712



Photo Name: Photo\_190630142659

## Additional Reference Data: Photos

HDR8038\_19



**Photo Name:** Photo\_190630142815



**Photo Name:** Photo\_190630142822



**Photo Name:** Photo\_190630142708



## Additional Reference Data: Photos

HDR8038\_19



**Photo Name:** Photo\_190630142719



**Photo Name:** Photo\_190630142704



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/23/2019  
 Applicant/Owner: PLP Sampling Point: HDR8500\_19  
 Investigators: MW, VW Landform (hillslope, terrace, etc.): Terrace  
 Local Relief (concave, convex, none): Concave Slope(%): 0 HGM: N/A  
 Subregion (LRR): X Lat: 59.757572 Long: -154.650589 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra (DEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center. Small depression. No indicators of water, and upland soil.			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Rhododendron tomentosum</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Vaccinium uliginosum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Betula nana</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FACW species <u>4</u> x2= <u>8</u>
4. <u>Empetrum nigrum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>148</u> x3= <u>444</u>
5. <u>Salix pulchra</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	FACU species <u>11</u> x4= <u>44</u>
6. <u>Spiraea stevenii</u>	<u>8</u>	<u>No</u>	<u>FACU</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>145</u>				Column Totals: <u>163</u> (A) <u>496</u> (B)
50% of total cover: <u>72.5</u>				<u>Prevalence Index = B/A=</u> <u>3.04</u>
20% of total cover: <u>29</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Festuca altaica</u>	<u>6</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>4</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Prevalence Index is ≤3.0
3. <u>Rubus chamaemorus</u>	<u>4</u>	<u>Yes</u>	<u>FACW</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Chamaenerion angustifolium</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Carex bigelowii</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Carex sp.</u>	<u>1</u>	<u>No</u>	<u>N/A</u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>19</u>				
50% of total cover: <u>9.5</u>				
20% of total cover: <u>3.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>40</u>				<b>Present?</b>
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-10	5YR 2.5/2	100						Silt Loam	hor:A
10-20	7.5YR 2.5/3	100						Silt Loam	hor:B *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	WD - Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: Pit in low spot in small depression. No indicators. Pit too dry to apply alpha-alpha.    \*3: Gravel 25% starting at 10 inches

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>					
Surface Water Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	X <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	X <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	X <input checked="" type="checkbox"/>	Depth (inches):	
(includes capillary fringe)					
			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary indicators observed.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR8500\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Vaccinium vitis-idaea</u>	<u>4</u>	<u>No</u>	<u>FAC</u>

Additional Reference Data: Photos

HDR8500\_19



Photo Name: Photo\_190723081820

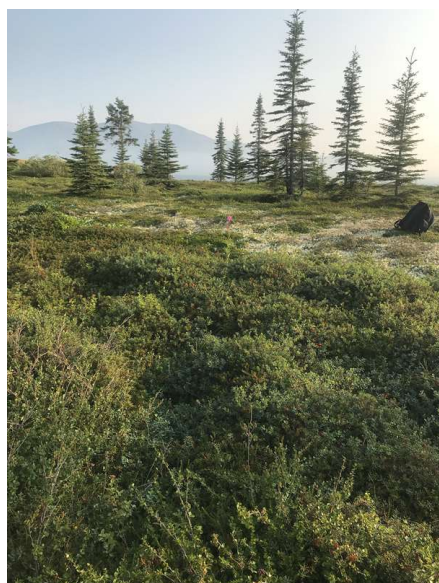


Photo Name: Photo\_190723081903





**Photo Name:** Photo\_190723081909



**Photo Name:** Photo\_190723081852



**Photo Name:** Photo\_190723081858

## Additional Reference Data: Photos

HDR8500\_19

**Photo Name:** Photo\_190723081828



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/23/2019  
 Applicant/Owner: PLP Sampling Point: HDR8501\_19  
 Investigators: MW, VW Landform (hillslope, terrace, etc.): Swale  
 Local Relief (concave, convex, none): Concave Slope(%): 0 HGM: Slope  
 Subregion (LRR): X Lat: 59.758575 Long: -154.650803 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Rhododendron tomentosum</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Betula nana</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Spiraea stevenii</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	FACW species <u>10</u> x2= <u>20</u>
4. <u>Empetrum nigrum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>122</u> x3= <u>366</u>
5. <u>Vaccinium uliginosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACU species <u>15</u> x4= <u>60</u>
6. <u>Vaccinium vitis-idaea</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>130</u>				Column Totals: <u>147</u> (A) <u>446</u> (B)
50% of total cover: <u>65</u>				<u>Prevalence Index = B/A=</u> <u>3.03</u>
20% of total cover: <u>26</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Rubus chamaemorus</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Prevalence Index is ≤3.0
3. <u>Carex bigelowii</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>17</u>				
50% of total cover: <u>8.5</u>				
20% of total cover: <u>3.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>25</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>60</u>				<b>Present?</b>
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-10									hor:Oi
10-12	10YR 4/2	100					No	Silt Loam	hor:E
12-14	7.5YR 3/2	100					Yes	Silt Loam	hor:B Faint alpha alpha
14-20	10YR 2/2	90					No	Sandy Loam	hor:C With 10% gravel.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>SPD - Somewhat Poorly Drained</u>	

Remarks: No saturation. Assume saturation based on landscape position and seasonal dry conditions.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

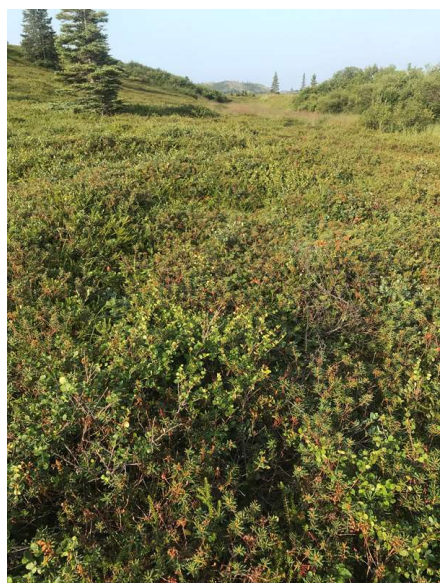
Geomorphic Position: Swale

## Additional Reference Data: Photos

HDR8501\_19



**Photo Name:** Photo\_190723091726



**Photo Name:** Photo\_190723091935



**Photo Name:** Photo\_190723091849



## Additional Reference Data: Photos

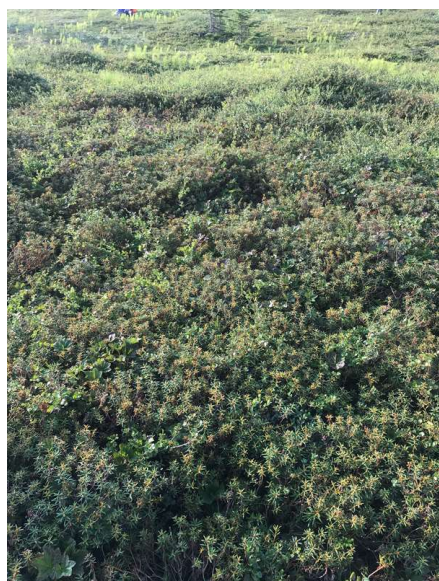
HDR8501\_19



**Photo Name:** Photo\_190723091741



**Photo Name:** Photo\_190723091901



**Photo Name:** Photo\_190723091915



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/23/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8503_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Terrace</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>0</u>	HGM: <u>Depressional</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.757252</u>	Long: <u>-154.645920</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Soil Map Unit Name: <u>N/A</u>		NWI Classification: <u>PSS3B</u>

Vegetation Type: Ericaceous Shrub Bog (ESB)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center. Small depression on lakeside terrace.</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Rhododendron tomentosum</u>	30	Yes	FAC	<u>Total % Cover of:</u> <u>31</u> <u>Multiply by:</u>
2. <u>Empetrum nigrum</u>	20	Yes	FAC	OBL species <u>31</u> x1= <u>31</u>
3. <u>Andromeda polifolia</u>	10	No	FACW	FACW species <u>46</u> x2= <u>92</u>
4. <u>Betula nana</u>	8	No	FAC	FAC species <u>94</u> x3= <u>282</u>
5. <u>Vaccinium uliginosum</u>	8	No	FAC	FACU species <u>1</u> x4= <u>4</u>
6. <u>Vaccinium vitis-idaea</u>	5	No	FAC	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>82</u>				Column Totals: <u>172</u> (A) <u>409</u> (B)
50% of total cover: <u>41</u>				<u>Prevalence Index = B/A=</u> <u>2.38</u>
20% of total cover: <u>16.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Rubus chamaemorus</u>	35	Yes	FACW	<u>X</u> Dominance Test is >50%
2. <u>Eriophorum brachyantherum</u>	30	Yes	OBL	<u>X</u> Prevalence Index is ≤3.0
3. <u>Calamagrostis canadensis</u>	10	No	FAC	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Equisetum arvense</u>	8	No	FAC	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Carex bigelowii</u>	5	No	FAC	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Chamaenerion angustifolium</u>	1	No	FACU	
7. <u>Pedicularis labradorica</u>	1	No	FACW	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>90</u>				
50% of total cover: <u>45</u>				
20% of total cover: <u>18</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>70</u>		% Cover of Bryophytes <u>70</u>		
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-14									hor:Oi
14-24									hor:Oa

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input checked="" type="checkbox"/> Histosol or Histel (A1)		<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)		<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)		<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)		and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)		<sup>4</sup> Give details of color change in Remarks.	

Restrictive Layer (if present):		Hydric Soil Present?	Yes	<input checked="" type="checkbox"/> X	No
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks: Organic to 24 inches.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> X Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> X	No
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X				
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X				
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> X				
Depth (inches): 8.0					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Saturation likely associated with water table.

Geomorphic Position: Depression

Additional Reference Data: Overflow Vegetation

HDR8503\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Vaccinium oxycoccos</u>	<u>1</u>	<u>No</u>	<u>OBL</u>

Additional Reference Data: Photos

HDR8503\_19



Photo Name: Photo\_190723103108



Photo Name: Photo\_190723103045



## Additional Reference Data: Photos

HDR8503\_19



**Photo Name:** Photo\_190723103051



**Photo Name:** Photo\_190723103101



**Photo Name:** Photo\_190723103017

## Additional Reference Data: Photos

HDR8503\_19



**Photo Name:** Photo\_190723103034



**Photo Name:** Photo\_190723103056

Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	7/23/2019
Applicant/Owner:	PLP			Sampling Point:	HDR8504_19
Investigators:	MW, VW	Landform (hillslope, terrace, etc.):	Terrace		
Local Relief (concave, convex, none):	Concave	Slope(%):	0	HGM:	Depressional
Subregion (LRR):	X	Lat:	59.763752	Long:	-154.632874
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	PSS3/EM1C		



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-16									hor:Oi
16-20	7.5YR 2.5/3	100						Silt Loam	hor:B 20% cobbles

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>SPD - Somewhat Poorly Drained</u>	

Remarks: Three soil pits were dug at this site. Two soil photos are for Pit 1, dug in between microhighs and micro lows at site: 0-5 Oi, 5-12 7.5YR 2.5/3 SiL, 12-18 10YR 3/6 SL, 18-20 2.5Y 5/3 SL, with 40% gravel/cobble. Soil profile and one soil plug photo are for Pit 2, dug on a microhigh. Soil was not saturated, assuming saturation based on seasonally dry conditions. Pit 3 was dug in between microhighs and lows: 0-2 Oi, 2-6 Oe, 6-14 10YR 2/2 SiL, 14-18 10YR 3/2 SiL with 20% gravel. Soil pit 2 selected to represent polygon because it was located on microhigh.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			<input checked="" type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)			<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>				<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?	Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Depth (inches):	
Water Table Present?	Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Evidence of ponding in hollows up to 12 inches deep, with sphagnum and Eriophorum. Water levels 1-foot higher would saturate within 12 inches of the soil surface each of the excavated soil pits. Evidence of ponding included water lines on side of hollow, water-stained leaves.

Geomorphic Position: Depression on bench (terrace)

Additional Reference Data: Overflow Vegetation

HDR8504\_19

	Absolute	Dominant	Indicator
	% Cover	Species?	Status
Sapling/Shrub			
Salix fuscescens	5	No	FACW

Additional Reference Data: Photos

HDR8504\_19



Photo Name: Photo\_190723124318



Photo Name: Photo\_190723124306

## Additional Reference Data: Photos

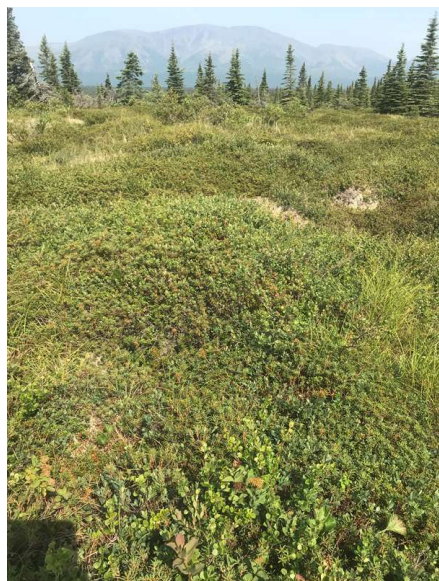
HDR8504\_19



**Photo Name:** Photo\_190723131722



**Photo Name:** Photo\_190723124334



**Photo Name:** Photo\_190723124252



## Additional Reference Data: Photos

HDR8504\_19



**Photo Name:** Photo\_190723124207



**Photo Name:** Photo\_190723124148



**Photo Name:** Photo\_190723124401

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/23/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8505_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Swale</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>1</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.765102</u>	Long: <u>-154.630814</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Closed Willow Tall Shrub (CWTS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center. Swale with no evidence of flowing water.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Picea glauca (tree)</u>	10	Yes	FACU	Number of Dominant Species
2. <u>      </u>				That Are OBL, FACW, or FAC: <u>6</u> (A)
3. <u>      </u>				Total Number of Dominant
4. <u>      </u>				Species Across All Strata: <u>7</u> (B)
Total Cover: <u>10</u>				Percent of Dominant Species
50% of total cover: <u>5</u>				That Are OBL, FACW, or FAC: <u>86</u> (A/B)
20% of total cover: <u>2</u>				<b>Prevalence Index Worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Salix pulchra</u>	65	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
2. <u>Vaccinium uliginosum</u>	35	Yes	FAC	FACW species <u>7</u> x2= <u>14</u>
3. <u>Empetrum nigrum</u>	15	No	FAC	FAC species <u>193</u> x3= <u>579</u>
4. <u>Rhododendron tomentosum</u>	15	No	FAC	FACU species <u>20</u> x4= <u>80</u>
5. <u>Salix glauca</u>	15	No	FAC	UPL species <u>      </u> x5= <u>      </u>
6. <u>Betula nana</u>	10	No	FAC	Column Totals: <u>220</u> (A) <u>673</u> (B)
Total Cover: <u>174</u>				<u>Prevalence Index = B/A=</u> <u>3.06</u>
50% of total cover: <u>87</u>				
20% of total cover: <u>34.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	15	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Epilobium anagallidifolium</u>	5	Yes	FAC	<u>      </u> Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	5	Yes	FAC	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Sanguisorba canadensis</u>	5	Yes	FACW	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Cornus suecica</u>	2	No	FAC	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Galium triflorum</u>	2	No	FAC	
7. <u>Rubus chamaemorus</u>	2	No	FACW	
8. <u>      </u>				
9. <u>      </u>				
10. <u>      </u>				
Total Cover: <u>36</u>				
50% of total cover: <u>18</u>				
20% of total cover: <u>7.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>25</u>				
(Where applicable)				

Remarks:

Pic gla percentage due to one large tree. Not representative of coverage of entire plot.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-6	10YR 2/1	100						Silt Loam	hor:A
6-12	7.5YR 2.5/3	80						Silt Loam	hor:B1 20% gravel
12-18	10YR 3/2	80						Silt Loam	hor:B2 20% gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	MWD - Moderately Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<u>      </u>	No	<u>    X    </u>	Depth (inches):	<u>  </u>			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No hydrology indicators observed.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR8505\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Spiraea stevenii	10	No	FACU
Vaccinium vitis-idaea	5	No	FAC
Potentilla fruticosa	4	No	FAC

Additional Reference Data: Photos

HDR8505\_19



Photo Name: Photo\_190723141843



Photo Name: Photo\_190723141723

## Additional Reference Data: Photos

HDR8505\_19



**Photo Name:** Photo\_190723141909



**Photo Name:** Photo\_190723141712



**Photo Name:** Photo\_190723141927

## Additional Reference Data: Photos

HDR8505\_19

**Photo Name:** Photo\_190723141857





Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	7/23/2019
Applicant/Owner:	PLP			Sampling Point:	HDR8507_19
Investigators:	MW, VW	Landform (hillslope, terrace, etc.):	Bench		
Local Relief (concave, convex, none):	Concave	Slope(%):	2	HGM:	Slope
Subregion (LRR):	X	Lat:	59.765106	Long:	-154.634094
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	PSS3/1B		

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-6									hor:Oi
6-12	10YR 2/1	100					Yes	Silt Loam	hor:A
12-18	10YR 2/2	100					Yes	Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	SPD - Somewhat Poorly Drained				

Remarks: H2S odor strong at 6 inches.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	16.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	12.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR8507\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Vaccinium oxycoccos</u>	<u>1</u>	<u>No</u>	<u>OBL</u>

Additional Reference Data: Photos

HDR8507\_19



Photo Name: Photo\_190723145732



Photo Name: Photo\_190723150125



## Additional Reference Data: Photos

HDR8507\_19



**Photo Name:** Photo\_190723145726



**Photo Name:** Photo\_190723150112



**Photo Name:** Photo\_190723150120



Photo Name: Photo\_190723150108

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/23/2019  
 Applicant/Owner: PLP Sampling Point: HDR8508\_19  
 Investigators: MW VW Landform (hillslope, terrace, etc.): Footslope  
 Local Relief (concave, convex, none): \_\_\_\_\_ Slope(%): 2 HGM: N/A  
 Subregion (LRR): X Lat: 59.768173 Long: -154.632568 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Equisetum (DEST-EQ)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If No, explain in Remarks)  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center. Very dry, thin soiled fringe to wet drainage

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species
2. _____	_____	_____	_____	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
4. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
Total Cover: _____				<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>2</u> x1= <u>2</u> FACW species <u>2</u> x2= <u>4</u> FAC species <u>148</u> x3= <u>444</u> FACU species <u>6</u> x4= <u>24</u> UPL species _____ x5= _____ Column Totals: <u>158</u> (A) <u>474</u> (B) Prevalence Index = B/A= <u>3.00</u>
50% of total cover: <u>0</u>				
20% of total cover: <u>0</u>				
<b>Sapling/Shrub Stratum</b>				
1. <u>Empetrum nigrum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% X Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
2. <u>Rhododendron tomentosum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Betula nana</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	
5. <u>Vaccinium vitis-idaea</u>	<u>12</u>	<u>No</u>	<u>FAC</u>	
6. <u>Arctous rubra</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>113</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____
50% of total cover: <u>56.5</u>				
20% of total cover: <u>22.6</u>				
<b>Herb Stratum</b>				
1. <u>Equisetum arvense</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic</b> <b>Vegetation Present?</b> Yes <u>X</u> No _____
2. <u>Carex bigelowii</u>	<u>6</u>	<u>No</u>	<u>FAC</u>	
3. <u>Festuca altaica</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
4. <u>Lupinus arcticus</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
5. <u>Rubus chamaemorus</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>45</u>				
50% of total cover: <u>22.5</u>				
20% of total cover: <u>9</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>15</u> % Cover of Bryophytes <u>30</u>				
(Where applicable)				

Remarks: Approximately 20% lichens.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-6	10YR 2/1	100						Silt Loam	hor:A
6-18	10YR 2/1	100						Fine Sandy Loam	

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type: None			Yes	No	X
Depth (inches):	N/A				
Field Drainage Class:					

Remarks: No indicators.  
90% cobble at 6 inches.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	No	X	Depth (inches):	
Water Table Present?	Yes	No	X	Depth (inches):	
Saturation Present?	Yes	No	X	Depth (inches):	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No indicators

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR8508\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Salix pulchra	2	No	FAC
Picea glauca	2	No	FACU
Spiraea stevenii	2	No	FACU
Vaccinium oxycoccos	2	No	OBL

Additional Reference Data: Photos

HDR8508\_19



Photo Name: Photo\_190723160155



Photo Name: Photo\_190723160245

## Additional Reference Data: Photos

HDR8508\_19



**Photo Name:** Photo\_190723160239



**Photo Name:** Photo\_190723160213



**Photo Name:** Photo\_190723160234





Photo Name: Photo\_190723160228

Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	7/24/2019
Applicant/Owner:	PLP			Sampling Point:	HDR8509_19
Investigators:	MW, VW	Landform (hillslope, terrace, etc.):	Hillside		
Local Relief (concave, convex, none):	Concave	Slope(%):	15	HGM:	N/A
Subregion (LRR):	X	Lat:	59.883209	Long:	-155.347946
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Tree Stratum				Dominance Test Worksheet:					
		Absolute % Cover	Dominant Species?	Indicator Status	Number of Dominant Species				
1.					That Are OBL, FACW, or FAC: 5 (A)				
2.					Total Number of Dominant				
3.					Species Across All Strata: 7 (B)				
4.					Percent of Dominant Species				
Total Cover:					That Are OBL, FACW, or FAC: 71 (A/B)				
50% of total cover:		0	20% of total cover:		0				
Sapling/Shrub Stratum				Prevalence Index Worksheet:					
					Total % Cover of:		Multiply by:		
1.	Salix pulchra	25	Yes	FAC	OBL species	x1=			
2.	Empetrum nigrum	15	Yes	FAC	FACW species	6 x2=	12		
3.	Dryas integrifolia	5	No	FACU	FAC species	104 x3=	312		
4.	Salix arctica	2	No	FAC	FACU species	7 x4=	28		
5.					UPL species	30 x5=	150		
6.					Column Totals:	147 (A)	502 (B)		
Total Cover:		47			Prevalence Index = B/A= 3.41				
50% of total cover:		23.5	20% of total cover:		9.4				
Herb Stratum				Hydrophytic Vegetation Indicators:					
1.	Festuca altaica	20	Yes	FAC	X	Dominance Test is >50%			
2.	Calamagrostis canadensis	15	Yes	FAC		Prevalence Index is ≤3.0			
3.	Sedum rosea ssp. integrifolium	15	Yes	FAC		Morphological Adaptations <sup>1</sup> (Provide			
4.	Arnica frigida	15	Yes	NL		data in Remarks or on a separate sheet)			
5.	Astragalus umbellatus	15	Yes	NL		Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)			
6.	Carex bigelowii	5	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
7.	Carex microchaeta	5	No	FAC					
8.	Angelica genuflexa	5	No	FACW					
9.	Aconitum delphiniifolium	2	No	FAC					
10.	Polygonum bistorta ssp. plumosum	2	No	FACU	Hydrophytic Vegetation Present? Yes X No				
Total Cover:		100							
50% of total cover:		50	20% of total cover:					20	
Plot size (radius, or length x width) 1/10 acre				% Bare Ground				0	
% Cover of Wetland Bryophytes 0		% Cover of Bryophytes 15							
(Where applicable)									

Remarks:
----------

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi
2-7	10YR 2/2	100						Silt Loam	hor:A With roots
7-18	10YR 2/2	40						Silt Loam	hor:B/C With 60% cobbles and gravels

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	MWD - Moderately Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: No hydric soil indicators observed. Too dry to apply alpha alpha.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>							
Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>	
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>	
Saturation Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>	
(includes capillary fringe)							
				<b>Wetland Hydrology Present?</b>			
				Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No hydrology indicators observed.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR8509\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Stellaria sitchana	1	No	FACW

Additional Reference Data: Photos

HDR8509\_19



Photo Name: Photo\_190724125423



Photo Name: Photo\_190724125639

**Photo Name:** Photo\_190724125607



**Photo Name:** Photo\_190724125403



**Photo Name:** Photo\_190724125617



**Photo Name:** Photo\_190724125628





# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/24/2019  
 Applicant/Owner: PLP Sampling Point: HDR8511\_19  
 Investigators: MW, VW Landform (hillslope, terrace, etc.): Shoulder Slope  
 Local Relief (concave, convex, none): Convex Slope(%): 12 HGM: N/A  
 Subregion (LRR): X Lat: 59.883835 Long: -155.349380 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				<b>Prevalence Index Worksheet:</b>
<u>Sapling/Shrub Stratum</u>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Salix pulchra</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACW species <u>17</u> x2= <u>34</u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>95</u> x3= <u>285</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>1</u> x4= <u>4</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>113</u> (A) <u>323</u> (B)
Total Cover: <u>45</u>				<u>Prevalence Index = B/A=</u> <u>2.86</u>
50% of total cover: <u>22.5</u>				
20% of total cover: <u>9</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus arcticus s.l.</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Valeriana capitata</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Aconitum delphinifolium</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	
7. <u>Angelica genuflexa</u>	<u>4</u>	<u>No</u>	<u>FACW</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Viola langsдорffii</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	must be present, unless disturbed or problematic.
9. <u>Pyrola minor</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Dryopteris expansa</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>68</u>				
50% of total cover: <u>34</u>				
20% of total cover: <u>13.6</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>25</u>				<b>Present?</b>
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-6	10YR 2/1	100					No	Silt Loam	hor:A
6-18	7.5YR 4/3	98	10YR 4/4	2	C	PL	No	Fine Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes _____ No _____ X _____	
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	MWD - Moderately Well Drained		

Remarks: Soil moist from recent rain.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>				<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):		
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):		
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No indicators

Geomorphic Position:

## Additional Reference Data: Photos

HDR8511\_19



**Photo Name:** Photo\_190724135421



**Photo Name:** Photo\_190724135345



**Photo Name:** Photo\_190724135434



## Additional Reference Data: Photos

HDR8511\_19



**Photo Name:** Photo\_190724135339



**Photo Name:** Photo\_190724135414

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/24/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8512_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>7</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.885014</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1B</u>	

Vegetation Type: Closed Willow Low Shrub (CWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				
50% of total cover: <u>0</u>				20% of total cover: <u>0</u>
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix pulchra</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>      </u> Multiply by: OBL species <u>      </u> x1= <u>      </u> FACW species <u>17</u> x2= <u>34</u> FAC species <u>137</u> x3= <u>411</u> FACU species <u>10</u> x4= <u>40</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>164</u> (A) <u>485</u> (B)  Prevalence Index = B/A= <u>2.96</u>
2. <u>Spiraea stevenii</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>85</u>				
50% of total cover: <u>42.5</u>				20% of total cover: <u>17</u>
<b>Herb Stratum</b>				
1. <u>Equisetum arvense</u>	<u>28</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% X Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Calamagrostis canadensis</u>	<u>18</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Sanguisorba canadensis</u>	<u>15</u>	<u>No</u>	<u>FACW</u>	
4. <u>Rubus arcticus s.l.</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
5. <u>Epilobium angustifolium</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
6. <u>Polemonium acutiflorum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
7. <u>Rubus stellatus</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
8. <u>Viola epipsila</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
9. <u>Angelica genuflexa</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>79</u>				
50% of total cover: <u>39.5</u>				20% of total cover: <u>15.8</u>
Plot size (radius, or length x width) <u>1/10 acre</u>				% Bare Ground <u>10</u>
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>40</u>		
(Where applicable)				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-18	10YR 3/2	70					Yes	Silt Loam	hor:C *2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)		<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)		<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)		<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)		and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)		<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b>	Yes	<input checked="" type="checkbox"/> X	No	<input type="checkbox"/>
Type: None						
Depth (inches):	N/A					
Field Drainage Class:	SPD - Somewhat Poorly Drained					

Remarks: H2S about 5 inches. Presence of reduced iron. \*2: With 30% cobbles. Fine roots throughout this layer.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b>	
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	Yes	<input checked="" type="checkbox"/> X
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	No	<input type="checkbox"/>
Saturation Present?	Yes <input checked="" type="checkbox"/> X No <input type="checkbox"/>		
(includes capillary fringe)	Depth (inches): 0.0		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Water seeping into pit around 4 inches and around 12 inches, but no water table observed. Saturated to surface. Water seeping in at 12 inches likely associated with water table. Plot is on a flootslope.  
  
Geomorphic Position:



## Additional Reference Data: Photos

HDR8512\_19



**Photo Name:** Photo\_190724145653



**Photo Name:** Photo\_190724145719



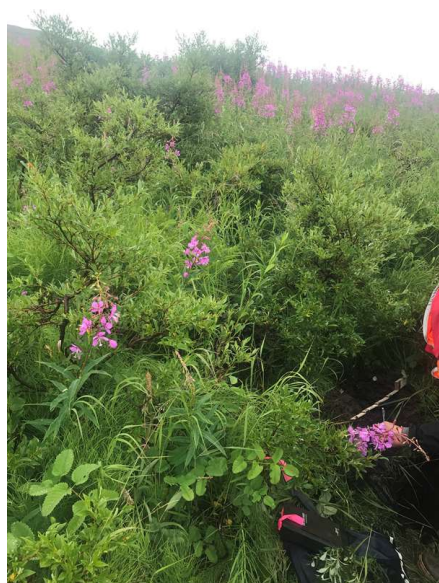
**Photo Name:** Photo\_190724145755

## Additional Reference Data: Photos

HDR8512\_19



**Photo Name:** Photo\_190724145808



**Photo Name:** Photo\_190724145801



**Photo Name:** Photo\_190724145746

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/24/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8513_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Bench</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>1</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.885654</u>	Long: <u>-155.357346</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Vaccinium uliginosum</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Empetrum nigrum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix pulchra</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>174</u> x3= <u>522</u>
5. <u>Rhododendron tomentosum</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	FACU species <u>2</u> x4= <u>8</u>
6. <u>Vaccinium vitis-idaea</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>131</u>				Column Totals: <u>176</u> (A) <u>530</u> (B)
50% of total cover: <u>65.5</u>				<u>Prevalence Index = B/A=</u> <u>3.01</u>
20% of total cover: <u>26.2</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex microchaeta</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Carex bigelowii</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	<u>6</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Calamagrostis canadensis</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Sedum rosea ssp. integrifolium</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Polygonum bistorta ssp. plumosum</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>45</u>				
50% of total cover: <u>22.5</u>				
20% of total cover: <u>9</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>25</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>40</u>				<b>Present?</b>
(Where applicable)				
Remarks: <u>No on PI.</u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-7									hor:Oe
7-20	10YR 4/4	99	5YR 4/6	1	C	PL	No	Fine Sandy Loam	

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)		<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)		<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)		<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)		and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)		<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>
Type:   None		
Depth (inches):    N/A		
Field Drainage Class:   MWD - Moderately Well Drained		

Remarks: Soil is dry. No hydric soil indicators

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>
Surface Water Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/> Depth (inches):		
Water Table Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/> Depth (inches):		
Saturation Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/> Depth (inches):		
(includes capillary fringe)		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No indicators

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR8513\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Salix reticulata	4	No	FAC
Picea glauca	1	No	FACU

Additional Reference Data: Photos

HDR8513\_19



Photo Name: Photo\_190724155102



Photo Name: Photo\_190724155023

## Additional Reference Data: Photos

HDR8513\_19



**Photo Name:** Photo\_190724155048



**Photo Name:** Photo\_190724155042



**Photo Name:** Photo\_190724155029



Photo Name: Photo\_190724155057



Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	7/25/2019
Applicant/Owner:	PLP			Sampling Point:	HDR8514_19
Investigators:	MW, VW	Landform (hillslope, terrace, etc.):	Hillslope		
Local Relief (concave, convex, none):	Convex	Slope(%):	15	HGM:	N/A
Subregion (LRR):	X	Lat:	59.886513	Long:	-155.360535
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present?	Yes <u>      </u>	No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>          </u>	No <u>      </u> X
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Tree Stratum				Dominance Test Worksheet:				
		Absolute % Cover	Dominant Species?	Indicator Status	Number of Dominant Species That Are OBL, FACW, or FAC:			
1.					1	(A)		
2.					Total Number of Dominant Species Across All Strata:			
3.					3	(B)		
4.					Percent of Dominant Species That Are OBL, FACW, or FAC:			
Total Cover:					33	(A/B)		
50% of total cover:		0	20% of total cover:		0			
Sapling/Shrub Stratum				Prevalence Index Worksheet:				
					Total % Cover of:		Multiply by:	
1.	Empetrum nigrum	85	Yes	FAC	OBL species	x1=		
2.	Vaccinium uliginosum	5	No	FAC	FACW species	2 x2=	4	
3.	Betula nana	2	No	FAC	FAC species	98 x3=	294	
4.					FACU species	9 x4=	36	
5.					UPL species	10 x5=	50	
6.					Column Totals:	119 (A)	384 (B)	
Total Cover:		92			Prevalence Index = B/A=			3.23
50% of total cover:		46	20% of total cover:		18.4			
Herb Stratum				Hydrophytic Vegetation Indicators:				
1.	Luetkea pectinata	10	Yes	UPL	Dominance Test is >50%			
2.	Epilobium angustifolium	5	Yes	FACU	Prevalence Index is ≤3.0			
3.	Carex bigelowii	2	No	FAC	Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)			
4.	Poa arctica	2	No	FAC	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)			
5.	Rubus arcticus s.l.	2	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
6.	Lycopodium alpinum	2	No	FACU				
7.	Trientalis europaea	2	No	FACU				
8.	Sanguisorba canadensis	2	No	FACW				
9.								
10.								
Total Cover:		27			Hydrophytic Vegetation Present?			
50% of total cover:		13.5	20% of total cover:		5.4	Yes	No	X
Plot size (radius, or length x width) 1/10 acre			% Bare Ground		5			
% Cover of Wetland Bryophytes (Where applicable)		0	% Cover of Bryophytes		15			

Remarks:
----------

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-4	10YR 3/4	100						Sandy Loam	hor:B1 With fine roots
4-16	10YR 3/4	80						Sandy Loam	hor:B2 With 20% cobbles and gravel.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	WD - Well Drained				

Remarks: No hydric soil indicators observed. Too dry to apply alpha alpha.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<u>      </u>	No	<u>      </u> X	Depth (inches):	<u>  </u>			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No hydrology indicators observed.

Geomorphic Position:



## Additional Reference Data: Photos

HDR8514\_19



**Photo Name:** Photo\_190724164203



**Photo Name:** Photo\_190724164244



**Photo Name:** Photo\_190724164256

## Additional Reference Data: Photos

HDR8514\_19



**Photo Name:** Photo\_190724164145



**Photo Name:** Photo\_190724164315



**Photo Name:** Photo\_190724164227

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/26/2019  
 Applicant/Owner: PLP Sampling Point: HDR8529\_19  
 Investigators: MW, VW Landform (hillslope, terrace, etc.): Lowland  
 Local Relief (concave, convex, none): Concave Slope(%): 0 HGM: Depressional  
 Subregion (LRR): X Lat: 59.730400 Long: -154.862762 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PEM1/SS1C

Vegetation Type: Ericaceous Shrub Bog (ESB)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>57</u> <u>Multiply by:</u> <u>      </u>
2. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>57</u> x1= <u>57</u>
3. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACW species <u>30</u> x2= <u>60</u>
4. <u>Rhododendron tomentosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>75</u> x3= <u>225</u>
5. <u>Andromeda polifolia</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>Vaccinium oxycoccos</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>90</u>				Column Totals: <u>162</u> (A) <u>342</u> (B)
50% of total cover: <u>45</u>				<u>Prevalence Index = B/A=</u> <u>2.11</u>
20% of total cover: <u>18</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Eriophorum angustifolium</u>	<u>35</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Dominance Test is >50%
2. <u>Eriophorum russeolum s.l.</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Carex aquatilis</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus chamaemorus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Drosera rotundifolia</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>72</u>				
50% of total cover: <u>36</u>				
20% of total cover: <u>14.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>55</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>75</u>				<b>Present?</b>
(Where applicable)				

Remarks:



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-15									hor:Oi
15-18									hor:Oe
18-21	10YR 2/2	100						Sandy Loam	hor:B *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks: \*3: With some organics and gravels.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	9.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	4.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:

## Additional Reference Data: Photos

HDR8529\_19



**Photo Name:** Photo\_190726133533



**Photo Name:** Photo\_190726133539



**Photo Name:** Photo\_190726133545

## Additional Reference Data: Photos

HDR8529\_19



**Photo Name:** Photo\_190726133527



**Photo Name:** Photo\_190726133516



**Photo Name:** Photo\_190726133509



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/26/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8532_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Lowland</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>2</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.732483</u>	Long: <u>-154.869995</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>White Spruce Woodland (WSW)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If No, explain in Remarks)

Are Vegetation: Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation: Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		<b>Is the Sampled Area within a Wetland?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Picea glauca (tree)</u>	12	Yes	FACU	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)
2. <u></u>				Total Number of Dominant Species Across All Strata: <u>5</u> (B)
3. <u></u>				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B)
4. <u></u>				
Total Cover: <u>12</u>				
50% of total cover: <u>6</u>		20% of total cover: <u>2.4</u>		
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	35	Yes	FAC	Total % Cover of: <u></u> Multiply by: <u></u>
2. <u>Rhododendron tomentosum</u>	35	Yes	FAC	OBL species <u></u> x1= <u></u>
3. <u>Vaccinium uliginosum</u>	25	No	FAC	FACW species <u>30</u> x2= <u>60</u>
4. <u>Salix pulchra</u>	10	No	FAC	FAC species <u>144</u> x3= <u>432</u>
5. <u>Betula nana</u>	8	No	FAC	FACU species <u>25</u> x4= <u>100</u>
6. <u>Salix barclayi</u>	8	No	FAC	UPL species <u></u> x5= <u></u>
Total Cover: <u>139</u>				Column Totals: <u>199</u> (A) <u>592</u> (B)
50% of total cover: <u>69.5</u>		20% of total cover: <u>27.8</u>		<i>Prevalence Index = B/A = <u>2.97</u></i>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex macrochaeta</u>	30	Yes	FACW	<input checked="" type="checkbox"/> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	15	Yes	FAC	<input checked="" type="checkbox"/> Prevalence Index is ≤3.0
3. <u>Carex microchaeta</u>	3	No	FAC	Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)
4. <u></u>				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u></u>				
6. <u></u>				
7. <u></u>				
8. <u></u>				
9. <u></u>				
10. <u></u>				
Total Cover: <u>48</u>				
50% of total cover: <u>24</u>		20% of total cover: <u>9.6</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>30</u>		
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-5	10YR 2/1	100						Silt Loam	hor:A
5-20	7.5YR 3/3	100						Loamy Fine Sand	hor:C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes _____ No _____ <u>  X  </u>	
Type:	<u>None</u>		
Depth (inches):	<u>N/A</u>		
Field Drainage Class:	<u>WD - Well Drained</u>		

Remarks: No hydric soil indicators. Too dry to apply alpha alpha.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No indicators.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Spiraea stevenii	8	No	FACU
Arctostaphylos alpina	5	No	FAC
Picea glauca	5	No	FACU

Additional Reference Data: Photos

HDR8532\_19



Photo Name: Photo\_190726142754



Photo Name: Photo\_190726142823



## Additional Reference Data: Photos

HDR8532\_19



**Photo Name:** Photo\_190726142806



**Photo Name:** Photo\_190726142827



**Photo Name:** Photo\_190726142817

## Additional Reference Data: Photos

HDR8532\_19

**Photo Name:** Photo\_190726142812



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/26/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8533_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Lowland</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>0</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.732594</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PEM1/SS1C</u>	

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Carex (DEST-C)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If No, explain in Remarks)

Are Vegetation: Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation: Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b>  Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____	_____	_____	_____	<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>42</u> x1= <u>42</u> FACW species <u>36</u> x2= <u>72</u> FAC species <u>45</u> x3= <u>135</u> FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: <u>123</u> (A) <u>249</u> (B)  Prevalence Index = B/A= <u>2.02</u>
50% of total cover: <u>0</u>	_____	_____	_____	
20% of total cover: _____	_____	_____	_____	
<b>Sapling/Shrub Stratum</b>				
1. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Andromeda polifolia</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
3. <u>Empetrum nigrum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
4. <u>Rhododendron tomentosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
5. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
6. _____	_____	_____	_____	
Total Cover: <u>60</u>	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
50% of total cover: <u>30</u>	_____	_____	_____	
20% of total cover: <u>12</u>	_____	_____	_____	
<b>Herb Stratum</b>				
1. <u>Carex aquatilis</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Eriophorum russeolum s.l.</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	<b>Hydrophytic</b> <b>Vegetation</b> <b>Present?</b>
3. <u>Carex macrochaeta</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
4. <u>Eriophorum angustifolium</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	
5. <u>Trichophorum caespitosum</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	
6. <u>Drosera rotundifolia</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	
7. <u>Pedicularis labradorica</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	<b>Hydrophytic</b> <b>Vegetation</b> <b>Present?</b>
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>63</u>	_____	_____	_____	
50% of total cover: <u>31.5</u>	_____	_____	_____	<b>Hydrophytic</b> <b>Vegetation</b> <b>Present?</b>
20% of total cover: <u>12.6</u>	_____	_____	_____	
Plot size (radius, or length x width) <u>1/10 acre</u>	_____	_____	_____	
% Cover of Wetland Bryophytes <u>60</u>	_____	% Cover of Bryophytes <u>70</u>	_____	
(Where applicable)				

Remarks: \_\_\_\_\_



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-10									hor:Oi
10-12									hor:Oe
12-20	10YR 3/3	100					N/A	Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/>	No
Depth (inches):	N/A				
Field Drainage Class:	SPD - Somewhat Poorly Drained				

Remarks: H2S at 6 inches

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	4.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	0.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:

## Additional Reference Data: Photos

HDR8533\_19



**Photo Name:** Photo\_190726150834



**Photo Name:** Photo\_190726150937



**Photo Name:** Photo\_190726150824



## Additional Reference Data: Photos

HDR8533\_19



**Photo Name:** Photo\_190726150920



**Photo Name:** Photo\_190726150907



**Photo Name:** Photo\_190726150854



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/27/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8538_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): <u>3</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.739685</u>	Long: <u>-154.873001</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Dwarf Ericaceous Shrub Tundra – Equisetum (DEST-EQ)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	
Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	30	Yes	FAC	<u>Total % Cover of:</u> <u>28</u> <u>Multiply by:</u> <u>28</u>
2. <u>Rhododendron tomentosum</u>	25	Yes	FAC	OBL species <u>28</u> x1= <u>28</u>
3. <u>Myrica gale</u>	20	Yes	OBL	FACW species <u>18</u> x2= <u>36</u>
4. <u>Betula nana</u>	15	No	FAC	FAC species <u>146</u> x3= <u>438</u>
5. <u>Vaccinium uliginosum</u>	12	No	FAC	FACU species <u>2</u> x4= <u>8</u>
6. <u>Salix glauca</u>	10	No	FAC	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>130</u>				Column Totals: <u>194</u> (A) <u>510</u> (B)
50% of total cover: <u>65</u>				<i>Prevalence Index = B/A=</i> <u>2.63</u>
20% of total cover: <u>26</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	40	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Carex macrochaeta</u>	10	No	FACW	<u>X</u> Prevalence Index is ≤3.0
3. <u>Carex aquatilis</u>	8	No	OBL	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Rubus chamaemorus</u>	6	No	FACW	<u>      </u> data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>64</u>				
50% of total cover: <u>32</u>				
20% of total cover: <u>12.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>15</u>				
% Cover of Bryophytes <u>30</u>				
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-8	10YR 2/1	100					No	Silt Loam	hor:A
8-20	10YR 3/2	100					No	Loamy Coarse	hor:C 45% Gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X					
Type:	<u>None</u>							
Depth (inches):	<u>N/A</u>							
Field Drainage Class:	<u>WD - Well Drained</u>							

Remarks: No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input checked="" type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X			
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No <input type="checkbox"/>			
Saturation Present? (includes capillary fringe)	Yes	<input checked="" type="checkbox"/> X No <input type="checkbox"/>			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Plot may be in transition area where water flows and discharges to wetland just downslope.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR8538\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Vaccinium vitis-idaea	8	No	FAC
Salix pulchra	6	No	FAC
Picea glauca	2	No	FACU
Andromeda polifolia	2	No	FACW

Additional Reference Data: Photos

HDR8538\_19



Photo Name: Photo\_190726163025



Photo Name: Photo\_190726163029



## Additional Reference Data: Photos

HDR8538\_19



**Photo Name:** Photo\_190726163021



**Photo Name:** Photo\_190726163010



**Photo Name:** Photo\_190726163015

## Additional Reference Data: Photos

HDR8538\_19

**Photo Name:** Photo\_190726163034



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/27/2019  
 Applicant/Owner: PLP Sampling Point: HDR8540\_19  
 Investigators: MW, VW Landform (hillslope, terrace, etc.): Mountainslope  
 Local Relief (concave, convex, none): Concave Slope(%): 7 HGM: N/A  
 Subregion (LRR): X Lat: 59.907604 Long: -155.461823 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra (DEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>80</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	85	Yes	FAC	Total % Cover of: <u>      </u> Multiply by:
2. <u>Salix reticulata</u>	20	No	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium uliginosum</u>	15	No	FAC	FACW species <u>12</u> x2= <u>24</u>
4. <u>Betula nana</u>	5	No	FAC	FAC species <u>154</u> x3= <u>462</u>
5. <u>Dryas integrifolia</u>	4	No	FACU	FACU species <u>7</u> x4= <u>28</u>
6. <u>Vaccinium vitis-idaea</u>	2	No	FAC	UPL species <u>7</u> x5= <u>35</u>
Total Cover: <u>133</u>				Column Totals: <u>180</u> (A) <u>549</u> (B)
50% of total cover: <u>66.5</u>				Prevalence Index = B/A= <u>3.05</u>
20% of total cover: <u>26.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	15	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	7	Yes	FACW	Prevalence Index is ≤3.0
3. <u>Angelica genuflexa</u>	5	Yes	FACW	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Astragalus umbellatus</u>	5	Yes	NL	data in Remarks or on a separate sheet)
5. <u>Aconitum delphinifolium</u>	2	No	FAC	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Anemone richardsonii</u>	2	No	FAC	
7. <u>Carex microchaeta</u>	2	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Poa arctica</u>	2	No	FAC	must be present, unless disturbed or problematic.
9. <u>Sedum rosea ssp. integrifolium</u>	2	No	FAC	
10. <u>Valeriana capitata</u>	2	No	FAC	
Total Cover: <u>47</u>				
50% of total cover: <u>23.5</u>				
20% of total cover: <u>9.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>5</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>30</u>				
(Where applicable)				
Remarks: <u>      </u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-16	10YR 2/2	30						Silt Loam	hor:B *2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	No	X
Depth (inches):	N/A				
Field Drainage Class:	WD - Well Drained				

Remarks: No soil indicators observed. \*2: With 70% medium to large cobbles.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> FAC-Neutral Test (D5)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)				
<input type="checkbox"/> Algal Mat or Crust (B4)					
<input type="checkbox"/> Iron Deposits (B5)					
<input type="checkbox"/> Surface Soil Cracks (B6)					

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	No	X	Depth (inches):	
Water Table Present?	Yes	No	X	Depth (inches):	
Saturation Present?	Yes	No	X	Depth (inches):	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary hydrology indicators observed. Water drains quickly from hillslope.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR8540\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Herb</b>			
Lagotis glauca s.l.	2	No	NL
Luzula multiflora	1	No	FACU
<b>Sapling/Shrub</b>			
Picea glauca	2	No	FACU

Additional Reference Data: Photos

HDR8540\_19



Photo Name: Photo\_190727084144



Photo Name: Photo\_190727084112

## Additional Reference Data: Photos

HDR8540\_19



Photo Name: Photo\_190727084126



Photo Name: Photo\_190727084032



Photo Name: Photo\_190727084007



Photo Name: Photo\_190727084156



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/27/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8541_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Hillside</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>7</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.907455</u>	Long: <u>-155.460724</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Open Willow Low Shrub (OWLS)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	40	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Salix reticulata</u>	35	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium uliginosum</u>	20	No	FAC	FACW species <u>9</u> x2= <u>18</u>
4. <u>Salix pulchra</u>	8	No	FAC	FAC species <u>199</u> x3= <u>597</u>
5. <u>Betula nana</u>	6	No	FAC	FACU species <u>1</u> x4= <u>4</u>
6. <u>Vaccinium vitis-idaea</u>	5	No	FAC	UPL species <u>2</u> x5= <u>10</u>
Total Cover: <u>114</u>				Column Totals: <u>211</u> (A) <u>629</u> (B)
50% of total cover: <u>57</u>				<u>Prevalence Index = B/A=</u> <u>2.98</u>
20% of total cover: <u>22.8</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	30	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Carex microchaeta</u>	20	Yes	FAC	<u>X</u> Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	20	Yes	FAC	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Petasites frigidus s.l.</u>	5	No	FACW	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Aconitum delphinifolium</u>	4	No	FAC	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Anemone richardsonii</u>	4	No	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Poa arctica</u>	4	No	FAC	
8. <u>Angelica genuflexa</u>	4	No	FACW	
9. <u>Sedum rosea ssp. integrifolium</u>	3	No	FAC	
10. <u>Arnica chamissonis</u>	2	No	N/A	
Total Cover: <u>99</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>49.5</u>				
20% of total cover: <u>19.8</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>30</u>		
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi
2-6	10YR 2/2	100						Silt Loam	hor:A
6-10	10YR 3/3	100						Silt Loam	hor:B Large cobbles at 10 inches

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	No	X
Depth (inches):	N/A				
Field Drainage Class:	MWD - Moderately Well Drained				

Remarks: No indicators

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	No	X	Depth (inches):	
Water Table Present?	Yes	No	X	Depth (inches):	
Saturation Present?	Yes	No	X	Depth (inches):	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Water flows through the site earlier in the year but in distinct, discontinuous rock-lined channels, periodically going subterranean.

Geomorphic Position:



Additional Reference Data: Overflow Vegetation

HDR8541\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Astragalus umbellatus	2	No	NL
Dryopteris expansa	1	No	FACU

Additional Reference Data: Photos

HDR8541\_19



Photo Name: Photo\_190727092440



Photo Name: Photo\_190727092356

## Additional Reference Data: Photos

HDR8541\_19



**Photo Name:** Photo\_190727092402



**Photo Name:** Photo\_190727092421



**Photo Name:** Photo\_190727092428

Photo Name: Photo\_190727092434





# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/27/2019  
 Applicant/Owner: PLP Sampling Point: HDR8542\_19  
 Investigators: MW, VW Landform (hillslope, terrace, etc.): Hillside  
 Local Relief (concave, convex, none): Concave Slope(%): 6 HGM: Slope  
 Subregion (LRR): X Lat: 59.907665 Long: -155.459824 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PEM1/SS1C

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Equisetum (DEST-EQ)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil X or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>15</u> x1= <u>15</u>
2. <u>Salix pulchra</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>52</u> x2= <u>104</u>
3. <u>Vaccinium uliginosum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	FAC species <u>143</u> x3= <u>429</u>
4. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>2</u> x4= <u>8</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>212</u> (A) <u>556</u> (B)
Total Cover: <u>75</u>				<u>Prevalence Index = B/A =</u> <u>2.62</u>
50% of total cover: <u>37.5</u>				
20% of total cover: <u>15</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Sanguisorba canadensis</u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Juncus mertensianus</u>	<u>15</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Calamagrostis canadensis</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Tofieldia coccinea</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Angelica genuflexa</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
7. <u>Petasites frigidus s.l.</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Rubus chamaemorus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	must be present, unless disturbed or problematic.
9. <u>Aconitum delphinifolium</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
10. <u>Luzula parviflora</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>137</u>				
50% of total cover: <u>68.5</u>				
20% of total cover: <u>27.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>5</u>				<b>Hydrophytic Vegetation</b> Yes <u>X</u> No <u>      </u>
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>40</u>				<b>Present?</b>
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5									hor:Oi
5-6									hor:Oe
6-9	2.5Y 4/2	100	2.5YR 3/4	5	C	M	Yes	Silt Loam	hor:B1 Faint alpha alpha reaction.
6-9			5YR 4/6	10	C	PL	Yes	Silt Loam	hor:B1 Faint alpha alpha reaction.
9-20	7.5YR 3/4	100	5YR 4/6	5	C	M		Sandy Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:

- ☐ Histosol or Histel (A1)
- ☐ Histic Epipedon (A2)
- ☐ Hydrogen Sulfide (A4)
- ☐ Thick Dark Surface (A12)
- ☐ Alaska Gleyed (A13)
- ☐ Alaska Redox (A14)
- ☐ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ Alaska Color Change (TA4)<sup>4</sup>
- ☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- ☒ Alaska Redox With 2.5Y Hue
- ☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

Restrictive Layer (if present):

Type: None  
Depth (inches): N/A  
Field Drainage Class: PD - Poorly Drained

Hydric Soil Present? Yes ☒ No ☐

Remarks: Site located in drainage way.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry Season Water Table (C2)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-stained Leaves (B9)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☒ Presence of Reduced Iron (C4)
- ☐ Salt Deposits (C5)
- ☐ Stunted or Stressed Plants (D1)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches):                       
Water Table Present? Yes ☒ No ☐ Depth (inches): 10.0  
Saturation Present? Yes ☒ No ☐ Depth (inches): 2.0  
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Saturated slope

Geomorphic Position: Drainage

Additional Reference Data: Overflow Vegetation

HDR8542\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Poa arctica	2	No	FAC
Polemonium acutiflorum	2	No	FAC
Sedum rosea ssp. integrifolium	2	No	FAC
Valeriana capitata	2	No	FAC
Luzula multiflora	2	No	FACU
Arnica chamissonis	2	No	FACW
Eriqeron peregrinus	2	No	FACW
Rumex arcticus	2	No	FACW
Anemone richardsonii	1	No	FAC
Carex saxatilis	1	No	FACW

Additional Reference Data: Photos

HDR8542\_19



Photo Name: Photo\_190727100350

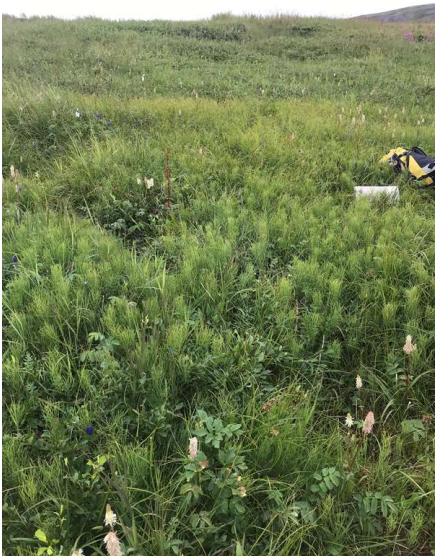


Photo Name: Photo\_190727100444



## Additional Reference Data: Photos

HDR8542\_19



**Photo Name:** Photo\_190727100458



**Photo Name:** Photo\_190727100407



**Photo Name:** Photo\_190727100421

Photo Name: Photo\_190727100428



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/27/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8543_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Hillside</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): <u>6</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.911888</u>	Long: <u>-155.462265</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Dwarf Ericaceous Shrub Tundra – Carex (DEST-C)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>7</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>7</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Salix reticulata</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Empetrum nigrum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium uliginosum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>10</u> x2= <u>20</u>
4. <u>Vaccinium vitis-idaea</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	FAC species <u>216</u> x3= <u>648</u>
5. <u>Betula nana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACU species <u>8</u> x4= <u>32</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>5</u> x5= <u>25</u>
Total Cover: <u>143</u>				Column Totals: <u>239</u> (A) <u>725</u> (B)
50% of total cover: <u>71.5</u>				Prevalence Index = B/A= <u>3.03</u>
20% of total cover: <u>28.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex microchaeta</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Poa arctica</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Equisetum arvense</u>	<u>8</u>	<u>Yes</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Anemone richardsonii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Aconitum delphinifolium</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	
7. <u>Valeriana capitata</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	
8. <u>Sanguisorba canadensis</u>	<u>4</u>	<u>No</u>	<u>FACW</u>	
9. <u>Artemisia globularia</u>	<u>4</u>	<u>No</u>	<u>NL</u>	
10. <u>Achillea millefolium s.l.</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>100</u>				
50% of total cover: <u>50</u>				
20% of total cover: <u>20</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>      </u>				
% Cover of Wetland Bryophytes <u>0</u>				
% Cover of Bryophytes <u>20</u>				
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-7	10YR 2/2	100						Silt Loam	hor:A
7-18	10YR 4/4	60						Fine Sandy Loam	hor:B
7-18	2.5Y 4/2	40						Fine Sandy Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	MWD - Moderately Well Drained				
			<b>Hydric Soil Present?</b>		
			Yes	_____	No _____
					X _____

Remarks: No hydric soil indicators. Too dry to apply alpha alpha.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Saturation Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
(includes capillary fringe)									
					<b>Wetland Hydrology Present?</b>	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No indicators

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR8543\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Solidago multiradiata	3	No	FACU
Sedum rosea ssp. integrifolium	2	No	FAC
Lupinus nootkatensis	2	No	FACU
Angelica genuflexa	2	No	FACW
Arnica chamissonis	2	No	FACW
Hierochloe odorata	2	No	FACW
Poa sp.	2	No	N/A
Pedicularis sp.	1	No	N/A
Viola sp.	1	No	N/A
Campanula rotundifolia	1	No	UPL

Additional Reference Data: Photos

HDR8543\_19



Photo Name: Photo\_190727113642



Photo Name: Photo\_190727113625

## Additional Reference Data: Photos

HDR8543\_19



**Photo Name:** Photo\_190727113539



**Photo Name:** Photo\_190727113636



**Photo Name:** Photo\_190727113609



## Additional Reference Data: Photos

HDR8543\_19

**Photo Name:** Photo\_190727113631



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/27/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8544_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Hillside</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>1</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.916744</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PEM1C</u>	

Vegetation Type: Subarctic Sedge – Moss Wet Meadow (SSMWM)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil X or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u>	No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>			

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>      </u> Multiply by: <u>      </u> OBL species <u>60</u> x1= <u>60</u> FACW species <u>22</u> x2= <u>44</u> FAC species <u>15</u> x3= <u>45</u> FACU species <u>      </u> x4= <u>      </u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>97</u> (A) <u>149</u> (B)  Prevalence Index = B/A= <u>1.54</u>
50% of total cover: <u>0</u>			20% of total cover: <u>0</u>	
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix fuscescens</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% X Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Salix pulchra</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Vaccinium uliginosum</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>25</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>12.5</u>			20% of total cover: <u>5</u>	
<b>Herb Stratum</b>				
1. <u>Comarum palustre</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Carex aquatilis</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>	
3. <u>Eriophorum angustifolium</u>	<u>10</u>	<u>No</u>	<u>OBL</u>	
4. <u>Carex macrochaeta</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
5. <u>Equisetum arvense</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
6. <u>Sedum rosea ssp. integrifolium</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
7. <u>Carex saxatilis</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
8. <u>Calamagrostis canadensis</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>72</u>				
50% of total cover: <u>36</u>			20% of total cover: <u>14.4</u>	
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>60</u>		
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-10	2.5Y 3/2	60					Yes	Sandy Loam	hor:B1 With 40% cobble
10-13	10YR 2/2	60					Yes	Silt Loam	hor:B2 With 40% cobble
13-20	10YR 3/3	60					Yes	Sandy Loam	hor:B With 40% cobble

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)		<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)		<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)		<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)		and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)		<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b>	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Type: None						
Depth (inches): N/A						
Field Drainage Class: PD - Poorly Drained						

Remarks: Presence of reduced iron.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b>	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):					
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	11.0				
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	4.0				
(includes capillary fringe)						

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Water collects here from slope before moving downhill.

Geomorphic Position: Flooded terrace



## Additional Reference Data: Photos

HDR8544\_19



**Photo Name:** Photo\_190727143037



**Photo Name:** Photo\_190727143003



**Photo Name:** Photo\_190727143032

## Additional Reference Data: Photos

HDR8544\_19



**Photo Name:** Photo\_190727142946



**Photo Name:** Photo\_190727143023



**Photo Name:** Photo\_190727143042



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/27/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8545_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Bench</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>1</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u> Lat: <u>59.918381</u>	Long: <u>-155.437698</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PEM1C</u>	

Vegetation Type: Subarctic Sedge – Moss Wet Meadow (SSMWM)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil X or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>7</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>7</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Salix pulchra</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>36</u> <u>Multiply by:</u>
2. <u>Vaccinium uliginosum</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>36</u> x1= <u>36</u>
3. <u>Betula nana</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACW species <u>4</u> x2= <u>8</u>
4. <u>Vaccinium vitis-idaea</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FAC species <u>87</u> x3= <u>261</u>
5. <u>Andromeda polifolia</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>Vaccinium oxycoccos</u>	<u>1</u>	<u>No</u>	<u>OBL</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>31</u>				Column Totals: <u>127</u> (A) <u>305</u> (B)
50% of total cover: <u>15.5</u>				<u>Prevalence Index = B/A=</u> <u>2.40</u>
20% of total cover: <u>6.2</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Eriophorum angustifolium</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Carex microchaeta</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Equisetum arvense</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Carex rostrata</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Poa arctica</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
7. <u>Sedum rosea ssp. integrifolium</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Sanguisorba canadensis</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	must be present, unless disturbed or problematic.
9. <u>Anemone richardsonii</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Petasites frigidus s.l.</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
Total Cover: <u>97</u>				
50% of total cover: <u>48.5</u>				
20% of total cover: <u>19.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>15</u> % Cover of Bryophytes <u>30</u>				
(Where applicable)				
Remarks:				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-5									hor:Oe
5-12	10YR 3/2	100					Yes	Sandy Clay Loam	hor:A Saturated on lower inch
12-14	10YR 3/3	100					Yes	Fine Sandy Loam	hor:B Rock refusal at 14 inches

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input checked="" type="checkbox"/> X	Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	SPD - Somewhat Poorly Drained				

Remarks: No soil indicators but evidence of ponding, water late into the growing season and positive alpha alpha test. Has appropriate landscape setting, hydrophytic vegetation and primary hydrology indicator.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> X	Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> X Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> X	Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)		Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)		<input checked="" type="checkbox"/> X Dry Season Water Table (C2)		Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> X	Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)				Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)				Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> X	FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	14.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	12.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Evidence of early season ponding. Weeping at 14", assumed to be water table.  
  
Geomorphic Position: Bench

Additional Reference Data: Overflow Vegetation

HDR8545\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Pedicularis sp.	1	No	N/A

Additional Reference Data: Photos

HDR8545\_19



Photo Name: Photo\_190727152726



Photo Name: Photo\_190727152730

## Additional Reference Data: Photos

HDR8545\_19



**Photo Name:** Photo\_190727152715



**Photo Name:** Photo\_190727152734



**Photo Name:** Photo\_190727152708



**Photo Name:** Photo\_190727152651



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/28/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8546_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Hillside</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>6</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u> Lat: <u>59.919239</u>	Long: <u>-155.447678</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>U</u>	

Vegetation Type: Closed Alder – Willow Tall Shrub (CAWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>      </u>			
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix barclayi</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Alnus sinuata</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>95</u>			
50% of total cover:	<u>47.5</u>	20% of total cover:	<u>19</u>	
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Equisetum arvense</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Heracleum maximum</u>	<u>12</u>	<u>No</u>	<u>FACU</u>	
4. <u>Dryopteris expansa</u>	<u>6</u>	<u>No</u>	<u>FACU</u>	
5. <u>Rubus arcticus s.l.</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
6. <u>Angelica lucida</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
7. <u>Streptopus amplexifolius</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
8. <u>Petasites frigidus s.l.</u>	<u>3</u>	<u>No</u>	<u>FACW</u>	
9. <u>Anemone richardsonii</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Stellaria sp.</u>	<u>1</u>	<u>No</u>	<u>N/A</u>	
Total Cover:	<u>86</u>			
50% of total cover:	<u>43</u>	20% of total cover:	<u>17.2</u>	
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>      </u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>20</u>				
(Where applicable)				

**Dominance Test Worksheet:**

Number of Dominant Species       

That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index Worksheet:**

Total % Cover of:        Multiply by:       

OBL species        x1=       

FACW species 3 x2= 6

FAC species 154 x3= 462

FACU species 23 x4= 92

UPL species        x5=       

Column Totals: 180 (A) 560 (B)

Prevalence Index = B/A= 3.11

**Hydrophytic Vegetation Indicators:**

X Dominance Test is >50%

       Prevalence Index is ≤3.0

       Morphological Adaptations<sup>1</sup> (Provide data in Remarks or on a separate sheet)

       Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No

Remarks: Most Salix and Alnus are over 5 feet. Some are about 5 feet or a little under.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2	10YR 2/2	100						Silt Loam	hor:A
2-18	10YR 3/3	100						Silt Loam	hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: MWD - Moderately Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: No indicators

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No indicators

Geomorphic Position:



## Additional Reference Data: Photos

HDR8546\_19



**Photo Name:** Photo\_190727163601



**Photo Name:** Photo\_190727163454



**Photo Name:** Photo\_190727163501

## Additional Reference Data: Photos

HDR8546\_19



**Photo Name:** Photo\_190727163732



**Photo Name:** Photo\_190727163745



**Photo Name:** Photo\_190727163719

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/28/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8547_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>5</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.880825</u>	Long: <u>-155.316971</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
NW1 Classification: <u>PSS1C</u>		

Vegetation Type: Closed Alder – Willow Tall Shrub (CAWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes      No X (If No, explain in Remarks)

Are Vegetation:      Soil      or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No     

Are Vegetation:      Soil      or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>    </u>
Hydric Soil Present? Yes <u>X</u> No <u>    </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>    </u>		

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b>
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Number of Dominant Species
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	That Are OBL, FACW, or FAC: <u>5</u> (A)
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Total Number of Dominant
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	Species Across All Strata: <u>6</u> (B)
Total Cover: <u>    </u>				Percent of Dominant Species
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		That Are OBL, FACW, or FAC: <u>83</u> (A/B)
<b>Sapling/Shrub Stratum</b>				<b>Prevalence Index Worksheet:</b>
1. <u>Alnus sinuata</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>    </u> <u>Multiply by:</u> <u>    </u>
2. <u>Salix pulchra</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>    </u> x1= <u>    </u>
3. <u>Salix barclayi</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>    </u> x2= <u>    </u>
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	FAC species <u>132</u> x3= <u>396</u>
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	FACU species <u>20</u> x4= <u>80</u>
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	UPL species <u>    </u> x5= <u>    </u>
Total Cover: <u>90</u>				Column Totals: <u>152</u> (A) <u>476</u> (B)
50% of total cover: <u>45</u>		20% of total cover: <u>18</u>		<u>Prevalence Index = B/A=</u> <u>3.13</u>
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum sylvaticum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Dryopteris expansa</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Calamagrostis canadensis</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Viola epipsila</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
7. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
Total Cover: <u>62</u>				
50% of total cover: <u>31</u>		20% of total cover: <u>12.4</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>40</u>		
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>25</u>		
(Where applicable)				
Remarks:				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>    </u>



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi
3-7	10YR 2/2	100					Yes	Silt Loam	hor:B1
7-12	2.5Y 3/2	100					Yes	Sandy Loam	hor:B2
12-20	2.5Y 4/1	60					Yes	Silty Clay Loam	hor:B With 40% cobbles and gravels

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>SPD - Somewhat Poorly Drained</u>	

Remarks: H2S odor at 4 inches. Layers 3-20 tested positive for alpha alpha. Reaction was instant and dark pink.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): 0.0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Saturation likely associated with water table.

Geomorphic Position: Toeslope

## Additional Reference Data: Photos

HDR8547\_19



**Photo Name:** Photo\_190728092006



**Photo Name:** Photo\_190728092036



**Photo Name:** Photo\_190728093300

## Additional Reference Data: Photos

HDR8547\_19



**Photo Name:** Photo\_190728093253



**Photo Name:** Photo\_190728093240



**Photo Name:** Photo\_190728093246



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/28/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8548_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>5</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.880699</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1B</u>	

Vegetation Type: Closed Willow Tall Shrub (CWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Salix barclayi</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>4</u> <u>Multiply by:</u>
2. <u>Alnus sinuata</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>4</u> x1= <u>4</u>
3. <u>Salix pulchra</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>169</u> x3= <u>507</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>4</u> x4= <u>16</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>75</u>				Column Totals: <u>177</u> (A) <u>527</u> (B)
50% of total cover: <u>37.5</u>				<u>Prevalence Index = B/A=</u> <u>2.98</u>
20% of total cover: <u>15</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Equisetum sylvaticum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Viola epipsila</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Comarum palustre</u>	<u>4</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Chamaenerion angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
7. <u>Dryopteris expansa</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>102</u>				
50% of total cover: <u>51</u>				
20% of total cover: <u>20.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>20</u>				<b>Present?</b>
(Where applicable)				

Remarks:

Plot is CWTS, but polygon is CAWTS.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-4	10YR 2/2	100						Silt Loam	hor:A
4-18	10YR 3/2	100						Silt Loam	hor:B1
18-22	2.5Y 4/1	90	7.5YR 4/6	10	C	PL		Silty Clay Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☐ Histosol or Histel (A1)

☐ Histic Epipedon (A2)

☒ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☐ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder

☐ Underlying Layer

☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,  
and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  
Type:   
Depth (inches):   
Field Drainage Class:

**Hydric Soil Present?**    Yes ☐    No ☒

Remarks: H2S odor at 6 inches. AK Redox with 2.5Y Hue is not within 12 inches of mineral soil surface.

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  

☐ Surface Water (A1)

☒ High Water Table (A2)

☒ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☒ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**  

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☐ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☐ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☐ FAC-Neutral Test (D5)

**Field Observations:**  
Surface Water Present?    Yes ☐    No ☒    Depth (inches):   
Water Table Present?    Yes ☒    No ☐    Depth (inches):   
Saturation Present?    Yes ☒    No ☐    Depth (inches):   
(includes capillary fringe)

**Wetland Hydrology Present?**    Yes ☒    No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position:

## Additional Reference Data: Photos

HDR8548\_19



**Photo Name:** Photo\_190728094900



**Photo Name:** Photo\_190728095000



**Photo Name:** Photo\_190728094456



## Additional Reference Data: Photos

HDR8548\_19



**Photo Name:** Photo\_190728094947



**Photo Name:** Photo\_190728094450



**Photo Name:** Photo\_190728094933

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/28/2019  
 Applicant/Owner: PLP Sampling Point: HDR8549\_19  
 Investigators: MW, VW Landform (hillslope, terrace, etc.): Toeslope  
 Local Relief (concave, convex, none): None Slope(%): 1 HGM: Slope  
 Subregion (LRR): X Lat: 59.880917 Long: -155.309113 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1B

Vegetation Type: Closed Alder – Willow Tall Shrub (CAWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>5</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>80</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Alnus sinuata</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Salix barclayi</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix pulchra</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>5</u> x2= <u>10</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>172</u> x3= <u>516</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>25</u> x4= <u>100</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>90</u>				Column Totals: <u>202</u> (A) <u>626</u> (B)
50% of total cover: <u>45</u>				Prevalence Index = B/A= <u>3.10</u>
20% of total cover: <u>18</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Dryopteris expansa</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index is ≤3.0
3. <u>Calamagrostis canadensis</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Sanguisorba canadensis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	data in Remarks or on a separate sheet)
5. <u>Viola epipsila</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>112</u>				
50% of total cover: <u>56</u>				
20% of total cover: <u>22.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>25</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>25</u>				<b>Present?</b>
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-5									hor:Oi
5-6	10YR 2/2	100					No	Silt Loam	hor:A
6-10	2.5YR 4/3	100					No	Sandy Clay Loam	hor:B1 With 20% gravel.
10-20	5Y 4/1	83	7.5YR 4/6	17	C	PL M	No	Sandy Clay Loam	hor:Bw *4

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☐ Histosol or Histel (A1)

☐ Histic Epipedon (A2)

☐ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☒ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder

☐ Underlying Layer

☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  
Type: None  
Depth (inches): N/A  
Field Drainage Class: SPD - Somewhat Poorly Drained

**Hydric Soil Present?**    Yes ☐    No ☒

Remarks:    \*4: Redox 12% in pore linings. With 20% gravel.

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  

☐ Surface Water (A1)

☐ High Water Table (A2)

☒ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☐ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**  

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☐ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☒ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☐ FAC-Neutral Test (D5)

**Field Observations:**  
Surface Water Present?    Yes ☐    No ☒    Depth (inches):                       
Water Table Present?    Yes ☒    No ☐    Depth (inches):           14.0            
Saturation Present?    Yes ☒    No ☐    Depth (inches):           0.0            
(includes capillary fringe)

**Wetland Hydrology Present?**    Yes ☐    No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Water seeping into pit at 9 inches.

Geomorphic Position: Toeslope



## Additional Reference Data: Photos

HDR8549\_19



**Photo Name:** Photo\_190728104644



**Photo Name:** Photo\_190728104558



**Photo Name:** Photo\_190728104616

## Additional Reference Data: Photos

HDR8549\_19



**Photo Name:** Photo\_190728104717



**Photo Name:** Photo\_190728104649



**Photo Name:** Photo\_190728104711



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/28/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8550_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>2</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.880478</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1B</u>	

Vegetation Type: Closed Alder – Willow Tall Shrub (CAWTS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>4</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>4</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Alnus sinuata</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Salix pulchra</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix barclayi</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	FACW species <u>2</u> x2= <u>4</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>171</u> x3= <u>513</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>8</u> x4= <u>32</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>80</u>				Column Totals: <u>181</u> (A) <u>549</u> (B)
50% of total cover: <u>40</u>				<u>Prevalence Index = B/A=</u> <u>3.03</u>
20% of total cover: <u>16</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Equisetum arvense</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Rubus arcticus s.l.</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Dryopteris expansa</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
5. <u>Geranium erianthum</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Sanguisorba canadensis</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
7. <u>Polemonium acutiflorum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>Streptopus amplexifolius</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	must be present, unless disturbed or problematic.
9. <u>Viola epipsila</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
10. <u>Trientalis europaea</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
Total Cover: <u>102</u>				
50% of total cover: <u>51</u>				
20% of total cover: <u>20.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>40</u>				<b>Present?</b>
(Where applicable)				

Remarks: Plot is in a small clearing, but polygon is CAWTS.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi
2-8	10YR 2/1	100					Yes	Silt Loam	hor:A
8-13	10YR 4/2	90	7.5YR 3/4	10	C	PL	Yes	Silt Loam	hor:B
13-20	5Y 4/1	85	5YR 4/6	15	C	PL	Yes	Silty Clay Loam	hor:C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

**Hydric Soil Indicators:**  

☐ Histosol or Histel (A1)

☐ Histic Epipedon (A2)

☒ Hydrogen Sulfide (A4)

☐ Thick Dark Surface (A12)

☐ Alaska Gleyed (A13)

☒ Alaska Redox (A14)

☐ Alaska Gleyed Pores (A15)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**  

☐ Alaska Color Change (TA4)<sup>4</sup>

☐ Alaska Alpine Swales (TA5)

☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder

☐ Underlying Layer

☐ Other (Explain in Remarks)

<sup>3</sup>One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.

<sup>4</sup>Give details of color change in Remarks.

**Restrictive Layer (if present):**  
Type: Clay loam  
Depth (inches): 13  
Field Drainage Class: PD - Poorly Drained

**Hydric Soil Present?**    Yes    ☒    No    ☐

Remarks: H2S odor at 10 inches.

HYDROLOGY

**Wetland Hydrology Indicators:**  
Primary Indicators (minimum of one required; check all that apply)  

☐ Surface Water (A1)

☐ High Water Table (A2)

☒ Saturation (A3)

☐ Water Marks (B1)

☐ Sediment Deposits (B2)

☐ Drift Deposits (B3)

☐ Algal Mat or Crust (B4)

☐ Iron Deposits (B5)

☐ Surface Soil Cracks (B6)

☐ Inundation Visible on Aerial Imagery (B7)

☐ Sparsely Vegetated Concave Surface (B8)

☐ Marl Deposits (B15)

☒ Hydrogen Sulfide Odor (C1)

☐ Dry Season Water Table (C2)

☐ Other (Explain in Remarks)

**Secondary Indicators (2 or more required)**  

☐ Water-stained Leaves (B9)

☐ Drainage Patterns (B10)

☐ Oxidized Rhizospheres along Living Roots (C3)

☒ Presence of Reduced Iron (C4)

☐ Salt Deposits (C5)

☐ Stunted or Stressed Plants (D1)

☒ Geomorphic Position (D2)

☐ Shallow Aquitard (D3)

☐ Microtopographic Relief (D4)

☐ FAC-Neutral Test (D5)

**Field Observations:**  
Surface Water Present?    Yes    ☐    No    ☒    Depth (inches):                       
Water Table Present?    Yes    ☒    No    ☐    Depth (inches):           13.0            
Saturation Present?    Yes    ☒    No    ☐    Depth (inches):           10.0            
(includes capillary fringe)

**Wetland Hydrology Present?**    Yes    ☒    No    ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Near base of slope, runoff supported hydrology.  
  
Geomorphic Position: Toeslope

Additional Reference Data: Overflow Vegetation

HDR8550\_19

Herb	Absolute % Cover	Dominant Species?	Indicator Status
Pyrola sp.	1	No	N/A

Additional Reference Data: Photos

HDR8550\_19



Photo Name: Photo\_190728112805



Photo Name: Photo\_190728112736

## Additional Reference Data: Photos

HDR8550\_19



**Photo Name:** Photo\_190728112344



**Photo Name:** Photo\_190728112746



**Photo Name:** Photo\_190728112756



## Additional Reference Data: Photos

HDR8550\_19



**Photo Name:** Photo\_190728112357



**Photo Name:** Photo\_190728112404

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/29/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8555_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Kettle</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>0</u>	HGM: <u>Depressional</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.829544</u>	Long: <u>-154.878067</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Subarctic Sedge – Moss Wet Meadow (SSMWM)</u>		NWI Classification: <u>PEM1C</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil X or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center. Mosaic wetland in hollows supported by high water flooding from adjacent pond. Mosaic transect contained 26 feet of wetland and 47 feet of upland (Site 8556), and was 36% wetland. Plot was 73 feet across from northern boundary (Photo Point 8557) to southern boundary (Photo Point 8558).

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<u>Tree Stratum</u>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				<b>Prevalence Index Worksheet:</b> <u>Total % Cover of:</u> <u>Multiply by:</u> OBL species <u>15</u> x1= <u>15</u> FACW species <u>30</u> x2= <u>60</u> FAC species <u>5</u> x3= <u>15</u> FACU species <u>      </u> x4= <u>      </u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>50</u> (A) <u>90</u> (B)  <i>Prevalence Index = B/A=</i> <u>1.80</u>
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<u>Sapling/Shrub Stratum</u>				
1. <u>Salix fuscescens</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Andromeda polifolia</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Vaccinium uliginosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>30</u>				
50% of total cover: <u>15</u>		20% of total cover: <u>6</u>		
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% X Prevalence Index is ≤3.0 <u>      </u> Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
1. <u>Carex rostrata</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Carex saxatilis</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>20</u>				
50% of total cover: <u>10</u>		20% of total cover: <u>4</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>15</u>		
% Cover of Wetland Bryophytes <u>55</u>		% Cover of Bryophytes <u>85</u>		
(Where applicable)				

Remarks:  
Plot includes only species from hollows. Plot size includes only depressions within the 1/10 acre.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi
4-10	10YR 3/3	100					No	Sandy Loam	hor:B
10-21	2.5Y 3/3	10	10YR 5/8	15	C	PL M	Yes	Sandy Loam	hor:Bw
10-21	2.5Y 5/3	90					Yes	Sandy Loam	hor:Bw

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input checked="" type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	SPD - Somewhat Poorly Drained				

Remarks: Plot is in a depression. Faint reaction in C layer to alpha alpha.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> X Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> X Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input checked="" type="checkbox"/> X Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> X Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	15.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	6.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Dry season water table. Water level in pond to the west of plot is 2 feet lower than water line.

Geomorphic Position: Depression. Bottom of hummocks.



## Additional Reference Data: Photos

HDR8555\_19



**Photo Name:** Photo\_190729091111



**Photo Name:** Photo\_190729091129



**Photo Name:** Photo\_190729090934

## Additional Reference Data: Photos

HDR8555\_19



**Photo Name:** Photo\_190729090950



**Photo Name:** Photo\_190729091122



**Photo Name:** Photo\_190729091048

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/29/2019  
 Applicant/Owner: PLP Sampling Point: HDR8556\_19  
 Investigators: MW, VW Landform (hillslope, terrace, etc.): Kettle  
 Local Relief (concave, convex, none): Convex Slope(%): 1 HGM: N/A  
 Subregion (LRR): X Lat: 59.829601 Long: -154.878052 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b> Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center. This plot represents the upland portion of the transect - the top of the hummocks. The wetland portion of the plot is represented by Plot 8555. The overall transect of the polygon contained 64% upland (See Plot 8555 notes).

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Rhododendron tomentosum</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Betula nana</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Vaccinium uliginosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACW species <u>1</u> x2= <u>2</u>
4. <u>Salix barclayi</u>	<u>6</u>	<u>No</u>	<u>FAC</u>	FAC species <u>127</u> x3= <u>381</u>
5. <u>Vaccinium vitis-idaea</u>	<u>4</u>	<u>No</u>	<u>FAC</u>	FACU species <u>2</u> x4= <u>8</u>
6. <u>Spiraea stevenii</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>113</u>				Column Totals: <u>130</u> (A) <u>391</u> (B)
50% of total cover: <u>56.5</u>				Prevalence Index = B/A= <u>3.01</u>
20% of total cover: <u>22.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex microchaeta</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>17</u>				
50% of total cover: <u>8.5</u>				
20% of total cover: <u>3.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>25</u>				<b>Present?</b>
(Where applicable)				

Remarks:

Plot is on micro highs. Hummocks are 1-2 feet high. Plot size is only the top of hummocks within 1/10 acre.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi
2-5	10YR 2/2	100					No	Silt Loam	hor:A
5-12	10YR 3/3	100					No	Silt Loam	hor:B
12-22	10YR 4/4	100					No	Loamy Fine Sand	hor:C

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class:	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: No indicators

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No indicators

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Andromeda polifolia</u>	<u>1</u>	<u>No</u>	<u>FACW</u>

Additional Reference Data: Photos

HDR8556\_19



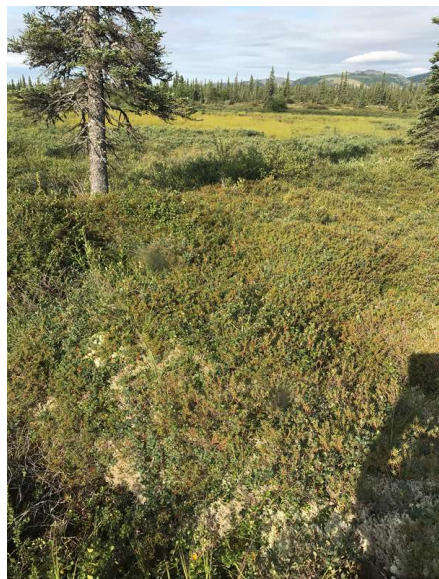
Photo Name: Photo\_190729094309



Photo Name: Photo\_190729094235

## Additional Reference Data: Photos

HDR8556\_19



**Photo Name:** Photo\_190729094318



**Photo Name:** Photo\_190729094304



**Photo Name:** Photo\_190729094313



## Additional Reference Data: Photos

HDR8556\_19

Photo Name: Photo\_190729094250



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/29/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8565_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Terrace</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>1</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.820797</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1B</u>	

Vegetation Type: Dwarf Ericaceous Shrub Tundra (DEST)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>	
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>	
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Empetrum nigrum</u>	50	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Betula nana</u>	10	No	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Rhododendron tomentosum</u>	10	No	FAC	FACW species <u>2</u> x2= <u>4</u>
4. <u>Salix pulchra</u>	5	No	FAC	FAC species <u>107</u> x3= <u>321</u>
5. <u>Vaccinium uliginosum</u>	5	No	FAC	FACU species <u>      </u> x4= <u>      </u>
6. <u>Vaccinium vitis-idaea</u>	5	No	FAC	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>87</u>				Column Totals: <u>109</u> (A) <u>325</u> (B)
50% of total cover: <u>43.5</u>				<u>Prevalence Index = B/A =</u> <u>2.98</u>
20% of total cover: <u>17.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	20	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Rubus chamaemorus</u>	2	No	FACW	<u>X</u> Prevalence Index is ≤3.0
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	data in Remarks or on a separate sheet)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>22</u>				
50% of total cover: <u>11</u>				
20% of total cover: <u>4.4</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>10</u>				
% Cover of Bryophytes <u>65</u>				
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-8									hor:Oi
8-10									hor:Oe
10-12	10YR 2/2	100						Silt Loam	hor:B
12-20	7.5YR 2.5/2	75						Silt Loam	hor:Bw With 25% cobbles and gravels.

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	SPD - Somewhat Poorly Drained				

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)					
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Sediment Deposits (B2)		<input checked="" type="checkbox"/> X Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input checked="" type="checkbox"/> X Geomorphic Position (D2)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> Microtopographic Relief (D4)		
			<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	14.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	8.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Dry season water table.

Geomorphic Position: Terrace



Additional Reference Data: Overflow Vegetation

HDR8565\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<i>Arctostaphylos alpina</i>	2	No	FAC

Additional Reference Data: Photos

HDR8565\_19



Photo Name: Photo\_190729115400



Photo Name: Photo\_190729115446

## Additional Reference Data: Photos

HDR8565\_19



**Photo Name:** Photo\_190729115418



**Photo Name:** Photo\_190729115438



**Photo Name:** Photo\_190729115345

Photo Name: Photo\_190729115427





Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	7/29/2019		
Applicant/Owner:	PLP			Sampling Point:	HDR8566_19		
Investigators:	MW, VW		Landform (hillslope, terrace, etc.):	Shoulder Slope			
Local Relief (concave, convex, none):	None		Slope(%):	2	HGM:	N/A	
Subregion (LRR):	X	Lat:	59.820583	Long:	-154.875412	Datum:	WGS84
Soil Map Unit Name:	N/A			NWI Classification:	U		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.) \_\_\_\_\_

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status
1.	Picea glauca (tree)	20	Yes	FACU
2.	Betula kenaica (tree)	15	Yes	FACU
3.				
4.				
Total Cover:		35		
50% of total cover:		17.5	20% of total cover:	7
Sapling/Shrub Stratum				
1.	Empetrum nigrum	45	Yes	FAC
2.	Rhododendron tomentosum	40	Yes	FAC
3.	Betula nana	25	No	FAC
4.	Vaccinium uliginosum	20	No	FAC
5.	Vaccinium vitis-idaea	10	No	FAC
6.	Salix alaxensis	5	No	FAC
Total Cover:		161		
50% of total cover:		80.5	20% of total cover:	32.2
Herb Stratum				
1.	Poa arctica	5	Yes	FAC
2.	Chamaenerion angustifolium	1	No	FACU
3.	Lupinus nootkatensis	1	No	FACU
4.				
5.				
6.				
7.				
8.				
9.				
10.				
Total Cover:		7		
50% of total cover:		3.5	20% of total cover:	1.4
Plot size (radius, or length x width) 1/10 acre			% Bare Ground	0
% Cover of Wetland Bryophytes 0			% Cover of Bryophytes 30	
(Where applicable)				

### Dominance Test Worksheet:

Number of Dominant Species

That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60 (A/B)

### Prevalence Index Worksheet:

Total % Cover of:	Multiply by:
OBL species	x1=
FACW species 1	x2= 2
FAC species 160	x3= 480
FACU species 42	x4= 168
UPL species	x5=
Column Totals: 203 (A)	650 (B)

Prevalence Index = B/A= 3.20

### Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

Prevalence Index is ≤3.0

Morphological Adaptations<sup>1</sup> (Provide data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

### Hydrophytic Vegetation Present?

Yes X No

Remarks:
----------

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi
2-4	10YR 2/2	100						Silt Loam	hor:A
4-20	10YR 3/4	100						Fine Sandy Loam	hor:Bw 30% gravel

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:			
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: No indicators. Soil too dry to apply alpha alpha strips.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
Saturation Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>			
(includes capillary fringe)					<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No indicators

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR8566\_19

	Absolute % Cover	Dominant Species?	Indicator Status
Sapling/Shrub			
Salix barclayi	5	No	FAC
Salix glauca	5	No	FAC
Picea glauca	5	No	FACU
Andromeda polifolia	1	No	FACW

Additional Reference Data: Photos

HDR8566\_19



Photo Name: Photo\_190729120941

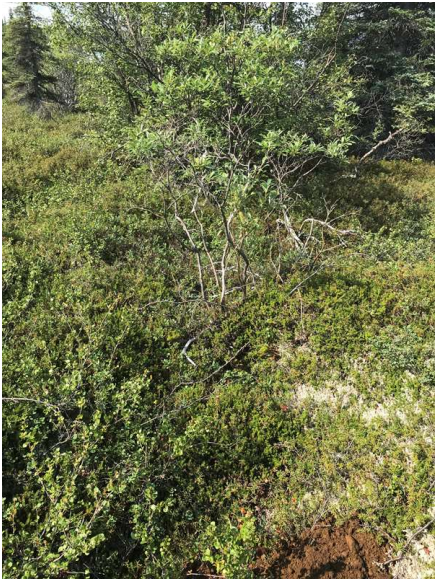
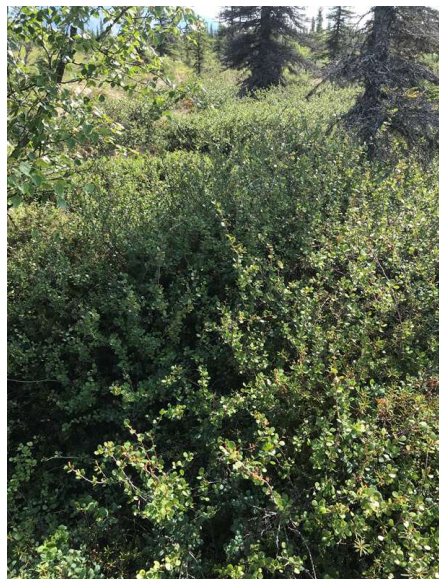


Photo Name: Photo\_190729121008



## Additional Reference Data: Photos

HDR8566\_19



**Photo Name:** Photo\_190729120946



**Photo Name:** Photo\_190729120931



**Photo Name:** Photo\_190729120954

**Photo Name:** Photo\_190729120922



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 7/29/2019  
 Applicant/Owner: PLP Sampling Point: HDR8570\_19  
 Investigators: MW, VW Landform (hillslope, terrace, etc.): Swale  
 Local Relief (concave, convex, none): Concave Slope(%): 1 HGM: Slope  
 Subregion (LRR): X Lat: 59.820026 Long: -154.875580 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: PSS1C

Vegetation Type: Open Dwarf Birch Shrub (ODBS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>      </u>		
Wetland Hydrology Present?	Yes <u>X</u>	No <u>      </u>		

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center. Several small channels cross the polygon.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>7</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>7</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Betula nana</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> <u>35</u> <u>Multiply by:</u>
2. <u>Myrica gale</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>	OBL species <u>35</u> x1= <u>35</u>
3. <u>Potentilla fruticosa</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>3</u> x2= <u>6</u>
4. <u>Empetrum nigrum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FAC species <u>105</u> x3= <u>315</u>
5. <u>Rhododendron tomentosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACU species <u>5</u> x4= <u>20</u>
6. <u>Vaccinium uliginosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>120</u>				Column Totals: <u>148</u> (A) <u>376</u> (B)
50% of total cover: <u>60</u>				<u>Prevalence Index = B/A=</u> <u>2.54</u>
20% of total cover: <u>24</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex bigelowii</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Equisetum arvense</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Comarum palustre</u>	<u>5</u>	<u>Yes</u>	<u>OBL</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Rubus chamaemorus</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Rumex arcticus</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>28</u>				
50% of total cover: <u>14</u>				
20% of total cover: <u>5.6</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>10</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>65</u>				<b>Present?</b>
(Where applicable)				

Remarks:



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-7									hor:Oi
7-10									hor:Oe
10-14	10YR 2/2	100					Yes	Silt Loam	hor:B1 With some organics
14-20	10YR 3/3	70					Yes	Silt Loam	hor:B2 *4

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <u>  X  </u> No <u>      </u>
Type:	<u>None</u>	
Depth (inches):	<u>N/A</u>	
Field Drainage Class:	<u>SPD - Somewhat Poorly Drained</u>	

Remarks: H2S odor at 10 inches.    \*4: With some organics, and 30% cobbles and gravels.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input checked="" type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> X	No	
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No <input type="checkbox"/>	Depth (inches):		14.0		
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No <input type="checkbox"/>	Depth (inches):		8.0		
(includes capillary fringe)							

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
H2S odor at 10 inches.

Geomorphic Position: Swale

Additional Reference Data: Overflow Vegetation

HDR8570\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Vaccinium vitis-idaea	5	No	FAC
Spiraea stevenii	5	No	FACU

Additional Reference Data: Photos

HDR8570\_19



Photo Name: Photo\_190729125553

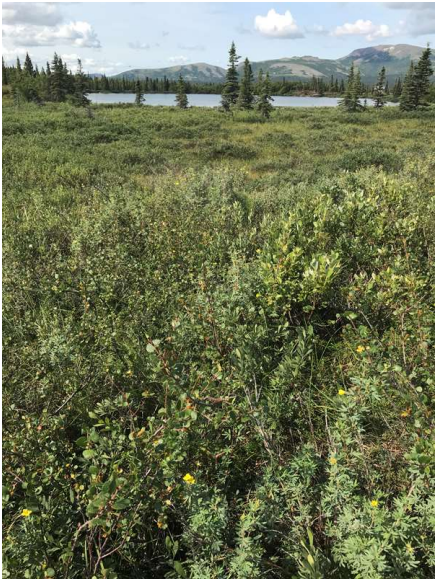
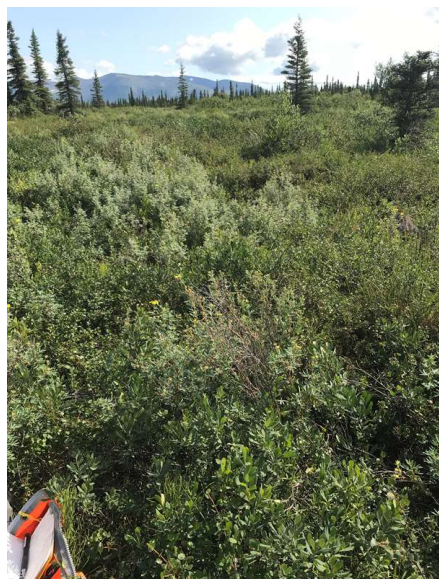


Photo Name: Photo\_190729125601

## Additional Reference Data: Photos

HDR8570\_19



**Photo Name:** Photo\_190729125545



**Photo Name:** Photo\_190729125536



**Photo Name:** Photo\_190729125501



Photo Name: Photo\_190729125527



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/29/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8576_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Outwash Plain</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>0</u>	HGM: <u>Flat</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.755966</u>	Datum: <u>WGS84</u>
Soil Map Unit Name: <u>N/A</u>	NWI Classification: <u>PSS1C</u>	

Vegetation Type: Open Sweetgale – Graminoid Bog (OSGB)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>X</u> No <u>      </u>
Hydric Soil Present? Yes <u>X</u> No <u>      </u>		
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>		
Remarks: <u>Abnormally Dry conditions according to the National Drought Mitigation Center.</u>		

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Myrica gale</u>	<u>50</u>	<u>Yes</u>	<u>OBL</u>	<u>Total % Cover of:</u> <u>84</u> <u>Multiply by:</u>
2. <u>Betula nana</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	OBL species <u>84</u> x1= <u>84</u>
3. <u>Rhododendron tomentosum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	FACW species <u>14</u> x2= <u>28</u>
4. <u>Andromeda polifolia</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	FAC species <u>50</u> x3= <u>150</u>
5. <u>Betula glandulosa</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	FACU species <u>      </u> x4= <u>      </u>
6. <u>Vaccinium uliginosum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>92</u>				Column Totals: <u>148</u> (A) <u>262</u> (B)
50% of total cover: <u>46</u>				<u>Prevalence Index = B/A=</u> <u>1.77</u>
20% of total cover: <u>18.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Eriophorum angustifolium</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>	<u>X</u> Prevalence Index is ≤3.0
3. <u>Eriophorum brachyantherum</u>	<u>10</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Carex bigelowii</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Trichophorum caespitosum</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Pedicularis labradorica</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. <u>Rubus chamaemorus</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
8. <u>Drosera rotundifolia</u>	<u>2</u>	<u>No</u>	<u>OBL</u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>56</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>28</u>				
20% of total cover: <u>11.2</u>				
Plot size (radius, or length x width) <u>1/10 acre</u> % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>45</u>		% Cover of Bryophytes <u>65</u>		
(Where applicable)				
Remarks:				

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-10									hor:Oi
10-14	10YR 3/3	100					No	Silt Loam	hor:B With organics
14-18	2.5Y 4/2	100					Yes	Sandy Loam	hor:Bw

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input checked="" type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	SPD - Somewhat Poorly Drained				

Remarks: H2S odor at 10 inches.

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input checked="" type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input checked="" type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	4.0	
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	1.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	0.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position: Outwash plain



Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Vaccinium oxycoccos</u>	<u>2</u>	<u>No</u>	<u>OBL</u>

Additional Reference Data: Photos

HDR8576\_19



Photo Name: Photo\_190729150618



Photo Name: Photo\_190729150637

## Additional Reference Data: Photos

HDR8576\_19



**Photo Name:** Photo\_190729150610



**Photo Name:** Photo\_190729150630



**Photo Name:** Photo\_190729150539

## Additional Reference Data: Photos

HDR8576\_19

Photo Name: Photo\_190729150548





# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>7/29/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8577_19</u>	
Investigators: <u>MW, VW</u>	Landform (hillslope, terrace, etc.): <u>Toeslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>3</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.755833</u>	Long: <u>-154.888443</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Closed Mixed Forest (CMF)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No <u>      </u>	

Remarks: Abnormally Dry conditions according to the National Drought Mitigation Center. Plot located on a slight topographic rise adjacent to a large wetland, and also adjacent to a road and utility corridor. Adjacent wetland boundary appears to be topographically defined. Plot near wetland boundary and that is the reason for wetness near the base of the soil pit.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				
1. <u>Betula kenaica (tree)</u>	<u>60</u>	<u>Yes</u>	<u>FACU</u>	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
2. <u>Picea glauca (tree)</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>      </u>				
4. <u>      </u>				
Total Cover: <u>80</u>				<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>      </u> Multiply by: <u>      </u> OBL species <u>      </u> x1= <u>      </u> FACW species <u>5</u> x2= <u>10</u> FAC species <u>153</u> x3= <u>459</u> FACU species <u>101</u> x4= <u>404</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>259</u> (A) <u>873</u> (B)  <i>Prevalence Index = B/A=</i> <u>3.37</u>
50% of total cover: <u>40</u>		20% of total cover: <u>16</u>		
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix barclayi</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
2. <u>Betula glandulosa</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Betula nana</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Salix pulchra</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
5. <u>Betula kenaica</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	
6. <u>Vaccinium vitis-idaea</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>91</u>				
50% of total cover: <u>45.5</u>		20% of total cover: <u>18.2</u>		
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Equisetum arvense</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Chamaenerion angustifolium</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
4. <u>Rubus chamaemorus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
5. <u>Dryopteris expansa</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
6. <u>Streptopus amplexifolius</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
7. <u>      </u>				
8. <u>      </u>				
9. <u>      </u>				
10. <u>      </u>				
Total Cover: <u>88</u>				
50% of total cover: <u>44</u>		20% of total cover: <u>17.6</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>20</u>		% Cover of Bryophytes <u>50</u>		
(Where applicable)				

Remarks:

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-6									hor:Oi
6-10	10YR 2/2	100					No	Sandy Loam	hor:A
10-20	7.5YR 2.5/1	100					No	Silt Loam	hor:Bw

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	SPD - Somewhat Poorly Drained		

Remarks: No indicators

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>									
Surface Water Present?	Yes	<u>      </u>	No	<u>  X  </u>	Depth (inches):	<u>  </u>			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Water table observed is associated with the surface water level of the adjacent wetland. Plot near wetland boundary.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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Sapling/Shrub	Absolute % Cover	Dominant Species?	Indicator Status
Vaccinium uliginosum	4	No	FAC
Spiraea stevenii	4	No	FACU

Additional Reference Data: Photos

HDR8577\_19



Photo Name: Photo\_190729152924



Photo Name: Photo\_190729152919



## Additional Reference Data: Photos

HDR8577\_19



**Photo Name:** Photo\_190729152846



**Photo Name:** Photo\_190729152933



**Photo Name:** Photo\_190729152857

## Additional Reference Data: Photos

HDR8577\_19



**Photo Name:** Photo\_190729152929

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 9/6/2019  
 Applicant/Owner: PLP Sampling Point: HDR8717\_19  
 Investigators: AG GM Landform (hillslope, terrace, etc.): Hillside  
 Local Relief (concave, convex, none): None Slope(%): 5 HGM: N/A  
 Subregion (LRR): X Lat: 59.922455 Long: -155.285995 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Alder Tall Shrub (CATS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>		
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>		

Remarks: Moderate Drought conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Alnus crispa</u>	<u>95</u>	<u>Yes</u>	<u>FAC</u>	Total % Cover of: <u>      </u> Multiply by:
2. <u>Ribes hudsonianum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
3. <u>Salix pulchra</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>192</u> x3= <u>576</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>5</u> x4= <u>20</u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>102</u>				Column Totals: <u>197</u> (A) <u>596</u> (B)
50% of total cover: <u>51</u>				Prevalence Index = B/A= <u>3.03</u>
20% of total cover: <u>20.4</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Calamagrostis canadensis</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Dominance Test is >50%
2. <u>Athyrium cyclosum</u>	<u>15</u>	<u>No</u>	<u>FAC</u>	Prevalence Index is ≤3.0
3. <u>Gymnocarpium dryopteris</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	Morphological Adaptations <sup>1</sup> (Provide
4. <u>Equisetum arvense</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
5. <u>Equisetum sylvaticum</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>95</u>				
50% of total cover: <u>47.5</u>				
20% of total cover: <u>19</u>				
Plot size (radius, or length x width) <u>20 X 20 feet</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
(Where applicable)				<b>Present?</b>

Remarks: Plot at same location as 3PP1098 plot, data from which indicates that the community is either Closed Alder Tall Shrub (CATS) or Bluejoint Herb (BH). Plot size constrained to sample the CATS community.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4	7.5YR 3/2	100					N/A	Loam	hor:A1 Many roots
4-11	7.5YR 2.5/2	100					N/A	Loam	hor:A2 Some roots & gravel
11-16	7.5YR 4/2	100					N/A	Silt Loam	hor:B *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
Type:   None	
Depth (inches):    N/A	
Field Drainage Class:    WD - Well Drained	

Remarks: No hydric soil indicators. Soil too dry for an alpha alpha-dipyridyl application.    \*3: Some gravel & small & thin cobbles; all angular

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X    Depth (inches):	
Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X    Depth (inches):	
Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X    Depth (inches): (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No wetland hydrology indicators present

Geomorphic Position:

## Additional Reference Data: Photos

HDR8717\_19



Photo Name: Photo\_190906082604



Photo Name: Photo\_190906082350



Photo Name: Photo\_190906082618



## Additional Reference Data: Photos

HDR8717\_19



**Photo Name:** Photo\_190906082506



**Photo Name:** Photo\_190906082546



**Photo Name:** Photo\_190906082637



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>9/6/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8719_19</u>	
Investigators: <u>AG GM</u>	Landform (hillslope, terrace, etc.): <u>Footslope</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>6</u>	HGM: <u>Slope</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.923676</u>	Long: <u>-155.284500</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Closed Willow Tall Shrub (CWTS)</u>		NWI Classification: <u>PSS1B</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If No, explain in Remarks)

Are Vegetation: Soil or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation: Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Remarks: Moderate Drought conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				
1. _____	_____	_____	_____	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix pulchra</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>3</u> x1= <u>3</u> FACW species <u>3</u> x2= <u>6</u> FAC species <u>201</u> x3= <u>603</u> FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: <u>207</u> (A) <u>612</u> (B)  Prevalence Index = B/A= <u>2.96</u>
2. <u>Salix barclayi</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Betula nana</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
Total Cover: <u>87</u>				
50% of total cover: <u>43.5</u>		20% of total cover: <u>17.4</u>		
<b>Herb Stratum</b>				
1. <u>Equisetum arvense</u>	<u>75</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Calamagrostis canadensis</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Viola sp.</u>	<u>7</u>	<u>No</u>	<u>N/A</u>	
4. <u>Rubus arcticus s.l.</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
5. <u>Comarum palustre</u>	<u>3</u>	<u>No</u>	<u>OBL</u>	
6. <u>Rubus chamaemorus</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
7. <u>Polemonium acutiflorum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
8. <u>Galium trifidum</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>127</u>				
50% of total cover: <u>63.5</u>		20% of total cover: <u>25.4</u>		
Plot size (radius, or length x width) <u>20 X 20 feet</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>25</u>		% Cover of Bryophytes <u>30</u>		
(Where applicable)				

Remarks: wetland/upland boundary upslope is at CATS/CWTS transition.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi
2-17							N/A		hor:Oe Buried woody debris

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks: Very strong H2S starting at 8".

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input checked="" type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input checked="" type="checkbox"/> X Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input checked="" type="checkbox"/> X Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> X Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	16.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	2.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Strong H2S at 8"

Geomorphic Position: Toeslope



**Photo Name:** Photo\_190906090133



**Photo Name:** Photo\_190906090100



**Photo Name:** Photo\_190906090140



## Additional Reference Data: Photos

HDR8719\_19

Photo Name: Photo\_190906090127



Photo Name: Photo\_190906090147



Photo Name: Photo\_190906090111



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 9/6/2019  
 Applicant/Owner: PLP Sampling Point: HDR8722\_19  
 Investigators: AG GM Landform (hillslope, terrace, etc.): Hillside  
 Local Relief (concave, convex, none): None Slope(%): 8 HGM: N/A  
 Subregion (LRR): X Lat: 59.924973 Long: -155.284927 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Bluejoint Tall Grass (BTG)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Moderate Drought conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
<b>Tree Stratum</b>				
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>      </u>				
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix pulchra</u>	<u>8</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>8</u>				
50% of total cover: <u>4</u>		20% of total cover: <u>1.6</u>		
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>100</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Equisetum arvense</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
3. <u>Chamaenerion angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
4. <u>Angelica lucida</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>108</u>				
50% of total cover: <u>54</u>		20% of total cover: <u>21.6</u>		
Plot size (radius, or length x width) <u>20 X 20 feet</u>				
% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>0</u>		
(Where applicable)				

**Prevalence Index Worksheet:**  
 Total % Cover of:        Multiply by:  
 OBL species        x1=         
 FACW species        x2=         
 FAC species 113 x3= 339  
 FACU species 3 x4= 12  
 UPL species        x5=         
 Column Totals: 116 (A) 351 (B)  
 Prevalence Index = B/A= 3.03

**Hydrophytic Vegetation Indicators:**  
 X Dominance Test is >50%  
 Prevalence Index is ≤3.0  
 Morphological Adaptations<sup>1</sup> (Provide data in Remarks or on a separate sheet)  
 Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)  
  
<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No

Remarks:  
Trace cover - Aco del, San can.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2							N/A		hor:Oi Many fine roots
2-11	10YR 2/2	100					N/A	Silt Loam	hor:A Many roots
11-18	10YR 3/3	100					N/A	Silty Clay Loam	hor:B Few gravels & cobbles

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	MWD - Moderately Well Drained		
		<b>Hydric Soil Present?</b>	Yes _____ No _____ X _____

Remarks: No hydric soil indicators present. Soil too dry for alpha alpha-dipyridyl application.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>							
Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>	
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>	
Saturation Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>	
(includes capillary fringe)							
				<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No wetland hydrology indicators present

Geomorphic Position:



## Additional Reference Data: Photos

HDR8722\_19



**Photo Name:** Photo\_190906102345



**Photo Name:** Photo\_190906102257



**Photo Name:** Photo\_190906102311



## Additional Reference Data: Photos

HDR8722\_19



Photo Name: Photo\_190906101808



Photo Name: Photo\_190906101744



Photo Name: Photo\_190906102332

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 9/6/2019  
 Applicant/Owner: PLP Sampling Point: HDR8725\_19  
 Investigators: AG & GM Landform (hillslope, terrace, etc.): Hillside  
 Local Relief (concave, convex, none): None Slope(%): 15 HGM: N/A  
 Subregion (LRR): X Lat: 59.924751 Long: -155.286819 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Bluejoint Herb (BH)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b> Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Moderate Drought conditions according to the National Drought Mitigation Center. Mapped by 3PP as U-20 BTG, but actually U BH

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<b>Sapling/Shrub Stratum</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
Total Cover: _____				
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	100	Yes	FAC	
2. <u>Equisetum arvense</u>	35	Yes	FAC	
3. <u>Chamaenerion angustifolium</u>	10	No	FACU	
4. <u>Angelica lucida</u>	5	No	FACU	
5. <u>Rubus arcticus s.l.</u>	1	No	FAC	
6. <u>Geranium erianthum</u>	1	No	FACU	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>152</u>				
50% of total cover: <u>76</u>		20% of total cover: <u>30.4</u>		
Plot size (radius, or length x width) _____ % Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>0</u> (Where applicable)				
<div style="display: flex; justify-content: space-between;"> <div> <b>Dominance Test Worksheet:</b>            Number of Dominant Species            That Are OBL, FACW, or FAC: <u>2</u> (A)            Total Number of Dominant            Species Across All Strata: <u>2</u> (B)            Percent of Dominant Species            That Are OBL, FACW, or FAC: <u>100</u> (A/B)         </div> <div> <b>Prevalence Index Worksheet:</b>            Total % Cover of: _____ Multiply by:            OBL species _____ x1= _____            FACW species _____ x2= _____            FAC species <u>136</u> x3= <u>408</u>            FACU species <u>16</u> x4= <u>64</u>            UPL species _____ x5= _____            Column Totals: <u>152</u> (A) <u>472</u> (B)              Prevalence Index = B/A= <u>3.11</u> </div> </div>				
<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Remarks: \_\_\_\_\_



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi
2-4									hor:Oa
4-14	10YR 4/3	95	7.5YR 4/4	5	C	PL M	N/A	Silty Clay Loam	hor:B1 Discrete pockets of redox
14-16	2.5Y 4/3	85	7.5YR 4/4	15	C	PL M	N/A	Silty Clay Loam	hor:B2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type: <u>None</u>	
Depth (inches): <u>N/A</u>	
Field Drainage Class: _____	

Remarks: 1" thatch (Cal can stems) above the Oi. B horizons are gravelly. Soil is compacted. Soil too dry for a a-dipyridyl application. Soil does not meet AK Redox w 2.5Y Hue due to lack of primary or secondary hydrology indicators and appropriate landscape position.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Marl Deposits (B15)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Dry Season Water Table (C2)	
<input type="checkbox"/> Other (Explain in Remarks)	

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No hydrology indicators present.

Geomorphic Position:



Photo Name: Photo\_190906111710



Photo Name: Photo\_190906111729



Photo Name: Photo\_190906111721



## Additional Reference Data: Photos

HDR8725\_19



Photo Name: Photo\_190906111621



Photo Name: Photo\_190906111738



Photo Name: Photo\_190906111550



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>9/6/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8726_19</u>	
Investigators: <u>AG GM</u>	Landform (hillslope, terrace, etc.): <u>Hillside</u>	
Local Relief (concave, convex, none): <u>Convex</u>	Slope(%): <u>14</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.924759</u>	Long: <u>-155.288315</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Bluejoint Herb (BH)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			
Remarks: Moderate Drought conditions according to the National Drought Mitigation Center.					

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>      </u>			
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b> <u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u> OBL species <u>      </u> x1= <u>      </u> FACW species <u>1</u> x2= <u>2</u> FAC species <u>107</u> x3= <u>321</u> FACU species <u>47</u> x4= <u>188</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>155</u> (A) <u>511</u> (B)  <i>Prevalence Index = B/A=</i> <u>3.30</u>
1. <u>Vaccinium uliginosum</u>	<u>12</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Empetrum nigrum</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Betula nana</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	
4. <u>Salix arctica</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
5. <u>Salix reticulata</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
6. <u>Rhododendron tomentosum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
Total Cover:	<u>39</u>			
50% of total cover:	<u>19.5</u>	20% of total cover:	<u>7.8</u>	
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b> <u>X</u> Dominance Test is >50% <u>      </u> Prevalence Index is ≤3.0 <u>      </u> Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Calamagrostis canadensis</u>	<u>55</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Chamaenerion angustifolium</u>	<u>35</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Angelica lucida</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
4. <u>Carex bigelowii</u>	<u>7</u>	<u>No</u>	<u>FAC</u>	
5. <u>Equisetum arvense</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
6. <u>Polemonium acutiflorum</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
7. <u>Equisetum scirpoides</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
8. <u>Poa alpina</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
9. <u>Rubus chamaemorus</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>116</u>			
50% of total cover:	<u>58</u>	20% of total cover:	<u>23.2</u>	
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>10</u>		
(Where applicable)				<b>Hydrophytic Vegetation Present?</b>
Yes <u>X</u> No <u>      </u>				

Remarks:

Patches of DEST within BH, DEST has high % Cha ang. Car big has very few inflorescences. Trace cover - Pet fri, Gal tri, Pic gla saplings

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi Moss
1-4							N/A		hor:Oe Many fine roots
4-17	7.5YR 4/2	80	10YR 4/4	20	C	M	N/A	Silty Clay Loam	hor:Bw Few gravels

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: MWD - Moderately Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X

Remarks: Wavy boundary between Oe & Bw layers; some large redox concentrations. Soil too dry for a a-dipyridyl application.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):		
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):		
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):		
(includes capillary fringe)		
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No hydrology indicators present.

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR8726\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Salix pulchra	1	No	FAC

Additional Reference Data: Photos

HDR8726\_19



Photo Name: Photo\_190906123527



Photo Name: Photo\_190906123554





**Photo Name:** Photo\_190906123536



**Photo Name:** Photo\_190906123546



**Photo Name:** Photo\_190906123501



**Photo Name:** Photo\_190906123515

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>9/6/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8729_19</u>	
Investigators: <u>AG &amp; GM</u>	Landform (hillslope, terrace, etc.): <u>Hillside</u>	
Local Relief (concave, convex, none): <u>None</u>	Slope(%): <u>9</u>	HGM: <u>N/A</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.926109</u>	Long: <u>-155.290237</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Dwarf Ericaceous Shrub Tundra (DEST)</u>		NWI Classification: <u>U</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)

Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No       

Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present? Yes <u>      </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u>      </u> No <u>X</u>	
Remarks: <u>Moderate Drought conditions according to the National Drought Mitigation Center. backslope upland</u>	

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Rhododendron tomentosum</u>	50	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Empetrum nigrum</u>	40	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Betula nana</u>	20	No	FAC	FACW species <u>2</u> x2= <u>4</u>
4. <u>Vaccinium uliginosum</u>	20	No	FAC	FAC species <u>178</u> x3= <u>534</u>
5. <u>Alnus crispa</u>	8	No	FAC	FACU species <u>3</u> x4= <u>12</u>
6. <u>Salix pulchra</u>	5	No	FAC	UPL species <u>      </u> x5= <u>      </u>
Total Cover: <u>148</u>				Column Totals: <u>183</u> (A) <u>550</u> (B)
50% of total cover: <u>74</u>				<u>Prevalence Index = B/A=</u> <u>3.01</u>
20% of total cover: <u>29.6</u>				
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Equisetum arvense</u>	20	Yes	FAC	<u>X</u> Dominance Test is >50%
2. <u>Calamagrostis canadensis</u>	5	No	FAC	<u>      </u> Prevalence Index is ≤3.0
3. <u>Carex bigelowii</u>	5	No	FAC	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>Chamaenerion angustifolium</u>	3	No	FACU	<u>      </u> data in Remarks or on a separate sheet)
5. <u>Petasites frigidus s.l.</u>	1	No	FACW	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>Rubus chamaemorus</u>	1	No	FACW	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>35</u>				
50% of total cover: <u>17.5</u>				
20% of total cover: <u>7</u>				
Plot size (radius, or length x width) <u>1/10 acre</u>				<b>Hydrophytic</b>
% Bare Ground <u>0</u>				<b>Vegetation</b>
% Cover of Wetland Bryophytes <u>0</u>				Yes <u>X</u> No <u>      </u>
% Cover of Bryophytes <u>15</u>				<b>Present?</b>
(Where applicable)				
Remarks: <u>Lichen cover = 5%. Trace cover - Ang luc</u>				



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2									hor:Oi Moss
2-8							N/A		hor:Oe Many fine roots
8-19	10YR 3/3	100					N/A	Clay Loam	hor:Bw Very few gravels

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)		<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)		<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)		<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)		and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)		<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type:	None	
Depth (inches):	N/A	
Field Drainage Class:	SPD - Somewhat Poorly Drained	

Remarks: No indicators present. Soil too dry for a a-dipyridyl application. Does not satisfy requirements of histic epipedon because organic horizons are not underlain by mineral soil with chroma 2 or less, and soil does not appear to be saturated during the growing season.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>		<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary wetland hydrology indicators present

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

HDR8729\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Vaccinium vitis-idaea</u>	<u>5</u>	<u>No</u>	<u>FAC</u>

Additional Reference Data: Photos

HDR8729\_19



Photo Name: Photo\_190906134339



Photo Name: Photo\_190906134324





Photo Name: Photo\_190906134346



Photo Name: Photo\_190906134355



Photo Name: Photo\_190906134257





**Photo Name:** Photo\_190906134310

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 9/6/2019  
 Applicant/Owner: PLP Sampling Point: HDR8730\_19  
 Investigators: AG & GM Landform (hillslope, terrace, etc.): Hillside  
 Local Relief (concave, convex, none): None Slope(%): 7 HGM: N/A  
 Subregion (LRR): X Lat: 59.926025 Long: -155.291031 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Bluejoint Herb (BH)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks: <u>Moderate Drought conditions according to the National Drought Mitigation Center. backslope upland</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
<b>Tree Stratum</b>				
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>      </u>			
50% of total cover:	<u>0</u>	20% of total cover:	<u>0</u>	
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix pulchra</u>	<u>6</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>6</u>			
50% of total cover:	<u>3</u>	20% of total cover:	<u>1.2</u>	
<b>Herb Stratum</b>				
1. <u>Calamagrostis canadensis</u>	<u>100</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Equisetum arvense</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Chamaenerion angustifolium</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
4. <u>Angelica lucida</u>	<u>8</u>	<u>No</u>	<u>FACU</u>	
5. <u>Rubus arcticus s.l.</u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover:	<u>149</u>			
50% of total cover:	<u>74.5</u>	20% of total cover:	<u>29.8</u>	
Plot size (radius, or length x width) <u>20 X 20 feet</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>0</u>	% Cover of Bryophytes <u>0</u>			
(Where applicable)				
<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>				

Remarks:  
Trace cover - TriEur, GerEri, SpiBea; dead standing shrubs = 2% cover.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-5							N/A		hor:Oa
5-16	7.5YR 3/3	100					N/A	Fine Sandy Loam	hor:B *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)			
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Type:	None		
Depth (inches):	N/A		
Field Drainage Class:	SED - Somewhat Excessively Drained		

Remarks: 1" thatch (Cal can stems) above Oi. Soil too dry for a a-dipyridyl application.    \*3: Very dry, no structure (crumbly)

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Salt Deposits (C5)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> FAC-Neutral Test (D5)			
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)				
<input type="checkbox"/> Algal Mat or Crust (B4)					
<input type="checkbox"/> Iron Deposits (B5)					
<input type="checkbox"/> Surface Soil Cracks (B6)					

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):			

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No wetland hydrology indicators present

Geomorphic Position:



## Additional Reference Data: Photos

HDR8730\_19



**Photo Name:** Photo\_190906142242



**Photo Name:** Photo\_190906142742



**Photo Name:** Photo\_190906142759



## Additional Reference Data: Photos

HDR8730\_19



Photo Name: Photo\_190906142230



Photo Name: Photo\_190906142807



Photo Name: Photo\_190906142750

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 9/6/2019  
 Applicant/Owner: PLP Sampling Point: HDR8731\_19  
 Investigators: AG GM Landform (hillslope, terrace, etc.): Hillside  
 Local Relief (concave, convex, none): None Slope(%): 7 HGM: N/A  
 Subregion (LRR): X Lat: 59.927090 Long: -155.293335 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open Willow Low Shrub (OWLS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>		
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>		

Remarks: Moderate Drought conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot.

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Number of Dominant Species
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>3</u> (A)
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>3</u> (B)
Total Cover: <u>      </u>				Percent of Dominant Species
50% of total cover: <u>0</u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
20% of total cover: <u>0</u>				
<b>Prevalence Index Worksheet:</b>				
<u>Sapling/Shrub Stratum</u>		Total % Cover of: <u>      </u> Multiply by:		
1. <u>Salix pulchra</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>Salix richardsonii</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	FACW species <u>10</u> x2= <u>20</u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>130</u> x3= <u>390</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>5</u> x4= <u>20</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>145</u> (A) <u>430</u> (B)
Total Cover: <u>40</u>				
50% of total cover: <u>20</u>				Prevalence Index = B/A= <u>2.97</u>
20% of total cover: <u>8</u>				
<b>Hydrophytic Vegetation Indicators:</b>				
<u>Herb Stratum</u>				X Dominance Test is >50%
1. <u>Calamagrostis canadensis</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	X Prevalence Index is ≤3.0
2. <u>Equisetum arvense</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	Morphological Adaptations <sup>1</sup> (Provide
3. <u>Angelica lucida</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	data in Remarks or on a separate sheet)
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>105</u>				
50% of total cover: <u>52.5</u>				
20% of total cover: <u>21</u>				
Plot size (radius, or length x width) <u>20 X 20 feet</u>				% Bare Ground <u>0</u>
% Cover of Wetland Bryophytes <u>0</u>				% Cover of Bryophytes <u>0</u>
(Where applicable)				

Remarks:  
Trace cover - Pol acu, San can.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3							N/A		hor:Oi Moss
3-6							N/A		hor:Oa Many roots, some woody debris
6-12	7.5YR 2.5/1	100					N/A	Silty Clay Loam	hor:A Some organics
12-17	7.5YR 3/1	100					N/A	Silty Clay Loam	hor:B A few gravels

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>		<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Type:	None	
Depth (inches):	N/A	
Field Drainage Class:	MWD - Moderately Well Drained	

Remarks: Soil too dry for a a-dipyridyl application.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary wetland hydrology indicators present

Geomorphic Position:

## Additional Reference Data: Photos

HDR8731\_19



Photo Name: Photo\_190906150842



Photo Name: Photo\_190906150605



Photo Name: Photo\_190906150836



## Additional Reference Data: Photos

HDR8731\_19



**Photo Name:** Photo\_190906150856



**Photo Name:** Photo\_190906150626



**Photo Name:** Photo\_190906150847



Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	9/6/2019
Applicant/Owner:	PLP			Sampling Point:	HDR8732_19
Investigators:	AG GM	Landform (hillslope, terrace, etc.):	Hillside		
Local Relief (concave, convex, none):	None	Slope(%):	7	HGM:	N/A
Subregion (LRR):	X	Lat:	59.927017	Long:	-155.293655
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	U		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.) \_\_\_\_\_

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Tree Stratum				Dominance Test Worksheet:			
Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)			
1. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)			
2. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)			
3. _____	_____	_____	_____				
4. _____	_____	_____	_____				
Total Cover: _____							
50% of total cover: <u>0</u>			20% of total cover: <u>0</u>				
Sapling/Shrub Stratum				Prevalence Index Worksheet:			
Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Total % Cover of: _____ Multiply by: _____			
1. Salix pulchra	45	Yes	FAC	OBL species	x1=	_____	
2. _____	_____	_____	_____	FACW species	x2=	_____	
3. _____	_____	_____	_____	FAC species	155 x3=	<u>465</u>	
4. _____	_____	_____	_____	FACU species	3 x4=	<u>12</u>	
5. _____	_____	_____	_____	UPL species	x5=	_____	
6. _____	_____	_____	_____	Column Totals:	158 (A)	<u>477</u> (B)	
Total Cover: <u>45</u>							
50% of total cover: <u>22.5</u>			20% of total cover: <u>9</u>				
Herb Stratum				Prevalence Index = B/A = <u>3.02</u>			
Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:			
1. Calamagrostis canadensis	85	Yes	FAC	X Dominance Test is >50%			
2. Equisetum arvense	25	Yes	FAC	Prevalence Index is ≤3.0			
3. Angelica lucida	3	No	FACU	Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)			
4. _____	_____	_____	_____	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)			
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
9. _____	_____	_____	_____				
10. _____	_____	_____	_____				
Total Cover: <u>113</u>							
50% of total cover: <u>56.5</u>			20% of total cover: <u>22.6</u>				
Plot size (radius, or length x width) <u>20 X 20 feet</u>			% Bare Ground <u>0</u>				
% Cover of Wetland Bryophytes <u>0</u>			% Cover of Bryophytes <u>10</u>				
(Where applicable)							
				Hydrophytic Vegetation Present? Yes <u>X</u> No _____			

Remarks:
Trace cover - San can. Dead-standing shrubs (snags) = 10% cover. Same community as 8731 but with several snags.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi Much moss
3-7							No		hor:Oa
7-12	7.5YR 2.5/1	100					No	Silty Clay Loam	hor:A
12-17	7.5YR 2.5/2	100					N/A		hor:B

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: MWD - Moderately Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Soil moist but not saturated.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Microtopographic Relief (D4)
	<input type="checkbox"/> FAC-Neutral Test (D5)

<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Soil moist not saturated; No indicators of hydrology.

Geomorphic Position:

## Additional Reference Data: Photos

HDR8732\_19



Photo Name: Photo\_190906152524



Photo Name: Photo\_190906152609



Photo Name: Photo\_190906152622



## Additional Reference Data: Photos

HDR8732\_19



**Photo Name:** Photo\_190906152616



**Photo Name:** Photo\_190906152603



**Photo Name:** Photo\_190906152547

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 9/6/2019  
 Applicant/Owner: PLP Sampling Point: HDR8733\_19  
 Investigators: AG GM Landform (hillslope, terrace, etc.): Hillside  
 Local Relief (concave, convex, none): None Slope(%): 7 HGM: N/A  
 Subregion (LRR): X Lat: 59.927185 Long: -155.294189 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Closed Alder Tall Shrub (CATS)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks: <u>Moderate Drought conditions according to the National Drought Mitigation Center.</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
<b>Tree Stratum</b>				Number of Dominant Species
1. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	That Are OBL, FACW, or FAC: <u>2</u> (A)
2. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Total Number of Dominant
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Species Across All Strata: <u>2</u> (B)
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Percent of Dominant Species
Total Cover: <u>      </u>				That Are OBL, FACW, or FAC: <u>100</u> (A/B)
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		<b>Prevalence Index Worksheet:</b>
<b>Sapling/Shrub Stratum</b>				<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
1. <u>Alnus crispa</u>	<u>97</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u>      </u> x1= <u>      </u>
2. <u>Ribes hudsonianum</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	FACW species <u>      </u> x2= <u>      </u>
3. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FAC species <u>200</u> x3= <u>600</u>
4. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	FACU species <u>1</u> x4= <u>4</u>
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	UPL species <u>      </u> x5= <u>      </u>
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	Column Totals: <u>201</u> (A) <u>604</u> (B)
Total Cover: <u>100</u>				<u>Prevalence Index = B/A=</u> <u>3.00</u>
50% of total cover: <u>50</u>		20% of total cover: <u>20</u>		<b>Hydrophytic Vegetation Indicators:</b>
<b>Herb Stratum</b>				<u>X</u> Dominance Test is >50%
1. <u>Athyrium cyclosorum</u>	<u>85</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> Prevalence Index is ≤3.0
2. <u>Calamagrostis canadensis</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
3. <u>Equisetum arvense</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	data in Remarks or on a separate sheet)
4. <u>Gymnocarpium dryopteris</u>	<u>1</u>	<u>No</u>	<u>FACU</u>	<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
6. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
7. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	must be present, unless disturbed or problematic.
9. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
10. <u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>	
Total Cover: <u>101</u>				<b>Hydrophytic</b>
50% of total cover: <u>50.5</u>		20% of total cover: <u>20.2</u>		<b>Vegetation</b>
Plot size (radius, or length x width) <u>20 X 20 feet</u>		% Bare Ground <u>0</u>		Yes <u>X</u> No <u>      </u>
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <sup>2</sup> <u>      </u>		<b>Present?</b>
(Where applicable)				

Remarks:  
Trace cover - StrAmp; bryophytes mainly moss on alder stems.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-1									hor:Oi
1-5	10YR 3/1	100					N/A	Silt Loam	hor:A
5-16	10YR 3/2	100					N/A	Silt Loam	hor:B *3

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>					
Type:	None				
Depth (inches):	N/A				
Field Drainage Class:	WD - Well Drained				
			<b>Hydric Soil Present?</b> Yes _____ No _____ <u>  X  </u>		

Remarks: 1" thick litter layer above Oi. Soil too dry for a a-dipyridyl application.    \*3: Cobbles, inclusions of fine sand

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>					
Surface Water Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	X <input type="checkbox"/>	Depth (inches):	
Water Table Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	X <input type="checkbox"/>	Depth (inches):	
Saturation Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	X <input type="checkbox"/>	Depth (inches):	
(includes capillary fringe)					
			<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No indicators present

Geomorphic Position:



## Additional Reference Data: Photos

HDR8733\_19



**Photo Name:** Photo\_190906154810



**Photo Name:** Photo\_190906154903



**Photo Name:** Photo\_190906154957

## Additional Reference Data: Photos

HDR8733\_19



Photo Name: Photo\_190906154936



Photo Name: Photo\_190906154910



Photo Name: Photo\_190906154823



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>9/7/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8734_19</u>	
Investigators: <u>AG GM</u>	Landform (hillslope, terrace, etc.): <u>Kettle</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>2</u>	HGM: <u>Depressional</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.859291</u>	Long: <u>-154.890961</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)</u>		NWI Classification: <u>PSS3C</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If No, explain in Remarks)

Are Vegetation: ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation: ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b>  Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	

Remarks: Moderate Drought conditions according to the National Drought Mitigation Center. This plot sampled a micro-high within a potential mosaic wetland. 8735 sampled a micro-low approximately 2.25 feet lower, which is representative. Both plots determined to be wetland, and will be mapped as single DEST-H, PSS3C community.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species <u>199</u> x3= <u>597</u> FACU species <u>8</u> x4= <u>32</u> UPL species _____ x5= _____ Column Totals: <u>207</u> (A) <u>629</u> (B)  <i>Prevalence Index = B/A=</i> <u>3.04</u>
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
<b>Sapling/Shrub Stratum</b>				
1. <u>Rhododendron tomentosum</u>	<u>75</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Empetrum nigrum</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Betula nana ssp. exilis</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	
4. <u>Vaccinium uliginosum</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	
5. <u>Salix pulchra</u>	<u>12</u>	<u>No</u>	<u>FAC</u>	
6. <u>Vaccinium vitis-idaea</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>205</u>				
50% of total cover: <u>102.5</u>		20% of total cover: <u>41</u>		
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Calamagrostis canadensis</u>	<u>2</u>	<u>Yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
Total Cover: <u>2</u>				
50% of total cover: <u>1</u>		20% of total cover: <u>0.4</u>		
Plot size (radius, or length x width) <u>10 X 10 feet</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>75</u>	% Cover of Bryophytes <u>90</u>			
(Where applicable)				
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				

Remarks:  
Trace cover - CarBig. Plot is small (10' x 10' square) so that it is limited to top of hummock. Wetland bryophytes are predominantly Sphagnum moss.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-16							N/A		hor:Oi Sphagnum
16-22	10YR 2/2	100					N/A	Silt Loam	hor:A *2

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	SPD - Somewhat Poorly Drained				

Remarks: Soil moist but not saturated. \*2: Some cobbles present, much decomposed organics

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input checked="" type="checkbox"/> X Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> X Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input checked="" type="checkbox"/> X Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input type="checkbox"/> FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	No <input checked="" type="checkbox"/> X	Depth (inches):		
Saturation Present?	Yes	No <input checked="" type="checkbox"/> X	Depth (inches):		
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Soil moist but not saturated. Water table determined to be within 40" bgs: Ground surface of an adjacent micro-low (sampled by 8735) is approximately 26" lower than ground surface at this plot (8734), and water table of 8735 is at 8" bgs. Thus, water table of this plot is likely at 34" bgs. Saturation depth is likely a few inches shallower than 34" bgs.

Geomorphic Position: Kettle, pond fringe.

Additional Reference Data: Overflow Vegetation

HDR8734\_19

	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
<u>Spiraea beauverdiana</u>	<u>8</u>	<u>No</u>	<u>FACU</u>

Additional Reference Data: Photos

HDR8734\_19



Photo Name: Photo\_190907102928



Photo Name: Photo\_190907102937



## Additional Reference Data: Photos

HDR8734\_19



**Photo Name:** Photo\_190907102844



**Photo Name:** Photo\_190907102907



**Photo Name:** Photo\_190907102922





**Photo Name:** Photo\_190907102952

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: <u>Pebble 2019</u>	Borough/City: <u>Lake and Peninsula</u>	Sampling Date: <u>9/7/2019</u>
Applicant/Owner: <u>PLP</u>	Sampling Point: <u>HDR8735_19</u>	
Investigators: <u>AG, GM</u>	Landform (hillslope, terrace, etc.): <u>Kettle</u>	
Local Relief (concave, convex, none): <u>Concave</u>	Slope(%): <u>0</u>	HGM: <u>Depressional</u>
Subregion (LRR): <u>X</u>	Lat: <u>59.859283</u>	Long: <u>-154.890991</u>
Soil Map Unit Name: <u>N/A</u>	Datum: <u>WGS84</u>	
Vegetation Type: <u>Dwarf Ericaceous Shrub Tundra – Hummocks (DEST-H)</u>		NWI Classification: <u>PSS3C</u>

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If No, explain in Remarks)

Are Vegetation: ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation: ☐ Soil ☒ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Remarks: Moderate Drought conditions according to the National Drought Mitigation Center. Micro-low approximately 2.25 feet lower than the micro-high sampled by 8734 and most other micro-highs high in the wetland. Micro-lows comprise approximately 15% of the wetland area.

## VEGETATION – Use scientific names of plants. List all species in the plot.

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____	_____	_____	_____	
50% of total cover: <u>0</u>	_____	20% of total cover: <u>0</u>	_____	<b>Prevalence Index Worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species <u>23</u> x1= <u>23</u> FACW species <u>1</u> x2= <u>2</u> FAC species <u>22</u> x3= <u>66</u> FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: <u>46</u> (A) <u>91</u> (B)  Prevalence Index = B/A= <u>1.98</u>
<b>Sapling/Shrub Stratum</b>				
1. <u>Salix pulchra</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Salix fuscescens</u>	<u>1</u>	<u>No</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: <u>11</u>	_____	_____	_____	
50% of total cover: <u>5.5</u>	_____	20% of total cover: <u>2.2</u>	_____	
<b>Herb Stratum</b>				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>Carex lenticularis</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Calamagrostis canadensis</u>	<u>12</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Juncus arcticus s.l.</u>	<u>8</u>	<u>Yes</u>	<u>OBL</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>35</u>	_____	_____	_____	
50% of total cover: <u>17.5</u>	_____	20% of total cover: <u>7</u>	_____	
Plot size (radius, or length x width) <u>10 X 10 feet</u> % Bare Ground <u>70</u>				
% Cover of Wetland Bryophytes <u>0</u> % Cover of Bryophytes <u>0</u> (Where applicable)				

Remarks:  
Trace cover - EquArv. PSS3C for the entire community sampled by 8734 & 8735. DEST-H is veg type for entire community- PV at plot. Willows are rooted in narrow benches that are 6-10" higher than most of the micro-low area.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4	10YR 2/1	100					Yes	Silt Loam	hor:A Faint a-a
4-12	2.5Y 3/3	60	7.5YR 4/4	40	C	PL M	Yes	Silt Loam	hor:B Cobbles
12-16	2.5Y 4/3	100					Yes	Coarse Sand	hor:C Faint a-a

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input checked="" type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	<input checked="" type="checkbox"/> X	No
Depth (inches):	N/A				
Field Drainage Class:	PD - Poorly Drained				

Remarks: Soil meets AK Redox with 2.5Y Hue due to presence of hydrophytic vegetation, primary hydrology indicators, and an appropriate landscape setting. Hydric soil also indicated by positive alpha-alpha dipyrldyl reaction in all horizons.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):		
Water Table Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	8.0	
Saturation Present?	Yes	<input checked="" type="checkbox"/> X No	Depth (inches):	0.0	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Geomorphic Position: Kettle, pond fringe, microlow





Photo Name: Photo\_190907105730



Photo Name: Photo\_190907105703



Photo Name: Photo\_190907105647



## Additional Reference Data: Photos

HDR8735\_19



**Photo Name:** Photo\_190907105735



**Photo Name:** Photo\_190907105740



**Photo Name:** Photo\_190907105745

# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 9/7/2019  
 Applicant/Owner: PLP Sampling Point: HDR8738\_19  
 Investigators: AG & GM Landform (hillslope, terrace, etc.): Lowland  
 Local Relief (concave, convex, none): Concave Slope(%): 0 HGM: N/A  
 Subregion (LRR): X Lat: 59.861366 Long: -154.889099 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: White Spruce Woodland (WSW)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	
Remarks: <u>Moderate Drought conditions according to the National Drought Mitigation Center. Hummocky valley</u>			

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b>				
1. <u>Picea glauca (tree)</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
2. <u>Populus tremuloides (tree)</u>	<u>3</u>	<u>No</u>	<u>FACU</u>	
3. <u>      </u>				
4. <u>      </u>				
Total Cover: <u>23</u>				<b>Prevalence Index Worksheet:</b> Total % Cover of: <u>      </u> Multiply by: <u>      </u> OBL species <u>      </u> x1= <u>      </u> FACW species <u>      </u> x2= <u>      </u> FAC species <u>106</u> x3= <u>318</u> FACU species <u>42</u> x4= <u>168</u> UPL species <u>      </u> x5= <u>      </u> Column Totals: <u>148</u> (A) <u>486</u> (B)  Prevalence Index = B/A= <u>3.28</u>
50% of total cover: <u>11.5</u>		20% of total cover: <u>4.6</u>		
<b>Sapling/Shrub Stratum</b>				
1. <u>Vaccinium uliginosum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> X Dominance Test is >50% Prevalence Index is ≤3.0 Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Betula nana</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Empetrum nigrum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Salix pulchra</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
5. <u>Vaccinium vitis-idaea</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
6. <u>Salix ovalifolia</u>	<u>8</u>	<u>No</u>	<u>FAC</u>	
Total Cover: <u>125</u>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>      </u>
50% of total cover: <u>62.5</u>		20% of total cover: <u>25</u>		
<b>Herb Stratum</b>				
1. <u>      </u>				<b>Hydrophytic</b> <b>Vegetation</b> <b>Present?</b>
2. <u>      </u>				
3. <u>      </u>				
4. <u>      </u>				
5. <u>      </u>				
6. <u>      </u>				
7. <u>      </u>				
8. <u>      </u>				
9. <u>      </u>				
10. <u>      </u>				
Total Cover: <u>      </u>				
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		
Plot size (radius, or length x width) <u>20 X 20 feet</u>		% Bare Ground <u>0</u>		
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>60</u>		
(Where applicable)				

Remarks: Standing dead snags 5% cover. Lichen 10% cover. Cal can moved to Shrub/Sapling stratum because <5% cover in Herb stratum. Trace - Cha ang, Car can.



Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-3									hor:Oi Mainly moss
3-5									hor:Oe Many roots
5-17	10YR 3/2	100					N/A	Very Fine Sandy	hor:B1 Few gravels & roots
17-21	10YR 3/3	100					N/A	Silt Loam	hor:B2 *4

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

Restrictive Layer (if present):			Hydric Soil Present?		
Type:	None		Yes	No	X
Depth (inches):	N/A				
Field Drainage Class:	MWD - Moderately Well Drained				

Remarks: Soil too dry for a a-dipyridyl application \*4: Intergrades with B1 layer, few gravels

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)		<input type="checkbox"/> Water-stained Leaves (B9)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Algal Mat or Crust (B4)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Microtopographic Relief (D4)	
<input type="checkbox"/> Surface Soil Cracks (B6)		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present?		
Surface Water Present?	Yes	No	X	Depth (inches):	
Water Table Present?	Yes	No	X	Depth (inches):	
Saturation Present?	Yes	No	X	Depth (inches):	
(includes capillary fringe)					

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No primary indicators present

Geomorphic Position: Depression

Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Picea glauca	8	No	FACU
Rhododendron tomentosum	7	No	FAC
Spiraea beauverdiana	5	No	FACU
Betula papyrifera s.l.	3	No	FACU
Populus tremuloides	3	No	FACU
Calamagrostis canadensis	1	No	FAC

Additional Reference Data: Photos

HDR8738\_19



Photo Name: Photo\_190907122015



Photo Name: Photo\_190907122030



## Additional Reference Data: Photos

HDR8738\_19



Photo Name: Photo\_190907120201



Photo Name: Photo\_190907122034



Photo Name: Photo\_190907120216





**Photo Name:** Photo\_190907122024

Project/Site:	Pebble 2019	Borough/City:	Lake and Peninsula	Sampling Date:	9/7/2019
Applicant/Owner:	PLP			Sampling Point:	HDR8742_19
Investigators:	AG, GM	Landform (hillslope, terrace, etc.):	Lowland		
Local Relief (concave, convex, none):	Concave	Slope(%):	2	HGM:	Depressional
Subregion (LRR):	X	Lat:	59.861359	Long:	-154.883255
				Datum:	WGS84
Soil Map Unit Name:	N/A	NWI Classification:	PSS3/1B		

Are Vegetation: \_\_\_\_\_ Soil \_\_\_\_\_ or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.) \_\_\_\_\_

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b>	Yes <u>    X    </u>	No <u>    </u>
Hydric Soil Present?	Yes <u>X</u>	No <u>    </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u>    </u>			

Tree Stratum				Dominance Test Worksheet:			
Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)		
1.					Total Number of Dominant Species Across All Strata: 3 (B)		
2.					Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)		
3.							
4.							
Total Cover:							
50% of total cover:		0	20% of total cover:	0			
Sapling/Shrub Stratum				Prevalence Index Worksheet:			
Sapling/Shrub Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Total % Cover of: Multiply by:		
1.	Rhododendron tomentosum	95	Yes	FAC	OBL species	x1=	
2.	Betula nana ssp. exilis	35	Yes	FAC	FACW species	10 x2=	20
3.	Vaccinium uliginosum	20	No	FAC	FAC species	160 x3=	480
4.	Spiraea beauverdiana	6	No	FACU	FACU species	7 x4=	28
5.	Vaccinium vitis-idaea	5	No	FAC	UPL species	x5=	
6.	Empetrum nigrum	3	No	FAC	Column Totals:	177 (A)	528 (B)
Total Cover:		165			Prevalence Index = B/A= 2.98		
50% of total cover:		82.5	20% of total cover:	33			
Herb Stratum				Hydrophytic Vegetation Indicators:			
Herb Stratum		Absolute % Cover	Dominant Species?	Indicator Status	X Dominance Test is >50%		
1.	Rubus chamaemorus	10	Yes	FACW	X Prevalence Index is ≤3.0		
2.	Carex bigelowii	2	No	FAC	Morphological Adaptations <sup>1</sup> (Provide data in Remarks or on a separate sheet)		
3.					Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)		
4.							
5.							
6.							
7.							
8.							
9.							
10.							
Total Cover:		12					
50% of total cover:		6	20% of total cover:	2.4			
Plot size (radius, or length x width)		20 X 20 feet	% Bare Ground				
% Cover of Wetland Bryophytes (Where applicable)		85	% Cover of Bryophytes	90			
				Hydrophytic Vegetation Present? Yes X No			

Remarks:
Trace - BetPap(sapling), CalCan, VacOxy; moss mainly Sphagnum.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-18							No		hor:Oi *1
18-23	10YR 2/1	95					No	Silt Loam	hor:A 2.5Y 6/2 is pockets of ash
18-23	2.5Y 6/2	5					No	Silt Loam	hor:A 2.5Y 6/2 is pockets of ash

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils <sup>3</sup> :		
<input checked="" type="checkbox"/> Histosol or Histel (A1)			<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>		<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Alaska Alpine Swales (TA5)		<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Alaska Redox With 2.5Y Hue		<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)					
<input type="checkbox"/> Alaska Gleyed (A13)			<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,		
<input type="checkbox"/> Alaska Redox (A14)			and an appropriate landscape position must be present unless disturbed or problematic.		
<input type="checkbox"/> Alaska Gleyed Pores (A15)			<sup>4</sup> Give details of color change in Remarks.		

<b>Restrictive Layer (if present):</b>			<b>Hydric Soil Present?</b>	Yes	<u>  X  </u>	No	<u>          </u>
Type:	<u>  None  </u>						
Depth (inches):	<u>  N/A  </u>						
Field Drainage Class:	<u>  SPD - Somewhat Poorly Drained  </u>						

Remarks: 4" thick layer of live sphagnum above Oi; boundary between live sphagnum and Oi is diffuse. Soil moist but not saturated. \*1: Sphagnum. More compressed beginning at 8"

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)		
Primary Indicators (minimum of one required; check all that apply)			<input type="checkbox"/> Water-stained Leaves (B9)		
<input type="checkbox"/> Surface Water (A1)		<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> High Water Table (A2)		<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		
<input type="checkbox"/> Saturation (A3)		<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Presence of Reduced Iron (C4)		
<input type="checkbox"/> Water Marks (B1)		<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Salt Deposits (C5)		
<input type="checkbox"/> Sediment Deposits (B2)		<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Stunted or Stressed Plants (D1)		
<input type="checkbox"/> Drift Deposits (B3)		<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> X Geomorphic Position (D2)		
<input type="checkbox"/> Algal Mat or Crust (B4)			<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Iron Deposits (B5)			<input type="checkbox"/> Microtopographic Relief (D4)		
<input type="checkbox"/> Surface Soil Cracks (B6)			<input checked="" type="checkbox"/> X FAC-Neutral Test (D5)		

Field Observations:			Wetland Hydrology Present?	Yes	<input checked="" type="checkbox"/> X	No	
Surface Water Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
Water Table Present?	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				
Saturation Present? (includes capillary fringe)	Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> X	Depth (inches):				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Soil moist not saturated. Meets wetland hydrology through secondary indicators only

Geomorphic Position: Depression



Additional Reference Data: Overflow Vegetation

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Sapling/Shrub	Absolute % Cover	Dominant Species?	Indicator Status
Picea glauca	1	No	FACU

Additional Reference Data: Photos

HDR8742\_19



Photo Name: Photo\_190907132542



Photo Name: Photo\_190907132453

## Additional Reference Data: Photos

HDR8742\_19



**Photo Name:** Photo\_190907132516



**Photo Name:** Photo\_190907132602



**Photo Name:** Photo\_190907132552





**Photo Name:** Photo\_190907132537



# WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: Pebble 2019 Borough/City: Lake and Peninsula Sampling Date: 9/7/2019  
 Applicant/Owner: PLP Sampling Point: HDR8746 \_19  
 Investigators: AG, GM Landform (hillslope, terrace, etc.): Lowland  
 Local Relief (concave, convex, none): Concave Slope(%): 2 HGM: N/A  
 Subregion (LRR): X Lat: 59.863697 Long: -154.886795 Datum: WGS84  
 Soil Map Unit Name: N/A NWI Classification: U

Vegetation Type: Open White Spruce Forest (OWSF)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes        No X (If No, explain in Remarks)  
 Are Vegetation:        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? Yes X No         
 Are Vegetation:        Soil        or Hydrology        naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach a site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u>      </u>	<b>Is the Sampled Area within a Wetland?</b>  Yes <u>      </u> No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>	

Remarks: Moderate Drought conditions according to the National Drought Mitigation Center.

## VEGETATION – Use scientific names of plants. List all species in the plot. \*See Vegetation Overflow for more

<u>Tree Stratum</u>	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>
1. <u>Picea glauca (tree)</u>	25	Yes	FACU	Number of Dominant Species
2. <u>Betula papyrifera s.l. (tree)</u>	3	No	FACU	That Are OBL, FACW, or FAC: <u>2</u> (A)
3. <u>      </u>				Total Number of Dominant
4. <u>      </u>				Species Across All Strata: <u>3</u> (B)
	Total Cover: <u>28</u>			Percent of Dominant Species
	50% of total cover: <u>14</u>	20% of total cover: <u>5.6</u>		That Are OBL, FACW, or FAC: <u>67</u> (A/B)
<u>Sapling/Shrub Stratum</u>				<b>Prevalence Index Worksheet:</b>
1. <u>Vaccinium uliginosum</u>	40	Yes	FAC	<u>Total % Cover of:</u> <u>      </u> <u>Multiply by:</u> <u>      </u>
2. <u>Betula nana</u>	35	Yes	FAC	OBL species <u>      </u> x1= <u>      </u>
3. <u>Rhododendron tomentosum</u>	25	No	FAC	FACW species <u>      </u> x2= <u>      </u>
4. <u>Empetrum nigrum</u>	15	No	FAC	FAC species <u>135</u> x3= <u>405</u>
5. <u>Vaccinium vitis-idaea</u>	15	No	FAC	FACU species <u>42</u> x4= <u>168</u>
6. <u>Populus tremuloides</u>	5	No	FACU	UPL species <u>      </u> x5= <u>      </u>
	Total Cover: <u>149</u>			Column Totals: <u>177</u> (A) <u>573</u> (B)
	50% of total cover: <u>74.5</u>	20% of total cover: <u>29.8</u>		<u>Prevalence Index = B/A=</u> <u>3.24</u>
<u>Herb Stratum</u>				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>      </u>				<u>X</u> Dominance Test is >50%
2. <u>      </u>				<u>      </u> Prevalence Index is ≤3.0
3. <u>      </u>				<u>      </u> Morphological Adaptations <sup>1</sup> (Provide
4. <u>      </u>				data in Remarks or on a separate sheet)
5. <u>      </u>				<u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. <u>      </u>				
7. <u>      </u>				<sup>1</sup> Indicators of hydric soil and wetland hydrology
8. <u>      </u>				must be present, unless disturbed or problematic.
9. <u>      </u>				
10. <u>      </u>				
	Total Cover: <u>      </u>			
	50% of total cover: <u>0</u>	20% of total cover: <u>0</u>		
Plot size (radius, or length x width) <u>1/10 acre</u>		% Bare Ground <u>0</u>		<b>Hydrophytic</b>
% Cover of Wetland Bryophytes <u>0</u>		% Cover of Bryophytes <u>70</u>		<b>Vegetation</b>
(Where applicable)				Yes <u>X</u> No <u>      </u>
				<b>Present?</b>

Remarks:

Cal can moved into Shrub/Sapling stratum because total Herb cover <5%. Trace cover - Cha ang

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				α-α	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-4									hor:Oi Mainly moss
4-7							N/A		hor:Oa *2
7-14	7.5YR 3/2	100					N/A	Silt Loam	hor:Bw Intergrades with B layer below
14-22	7.5YR 4/3	100						Silt Loam	hor:B Intergraded with Bw layer

<sup>1</sup>Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix, RC = Root Channel

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol or Histel (A1)	<input type="checkbox"/> Alaska Color Change (TA4) <sup>4</sup>	<input type="checkbox"/> Alaska Gleyed Without Hue 5Y or Redder
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Alaska Alpine Swales (TA5)	<input type="checkbox"/> Underlying Layer
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Alaska Redox With 2.5Y Hue	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)		
<input type="checkbox"/> Alaska Gleyed (A13)	<sup>3</sup> One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology,	
<input type="checkbox"/> Alaska Redox (A14)	and an appropriate landscape position must be present unless disturbed or problematic.	
<input type="checkbox"/> Alaska Gleyed Pores (A15)	<sup>4</sup> Give details of color change in Remarks.	

<b>Restrictive Layer (if present):</b>	
Type: None	
Depth (inches): N/A	
Field Drainage Class: MWD - Moderately Well Drained	
	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input type="checkbox"/>

Remarks: Soil too dry for a a-dipyridyl application. No indicators present \*2: Wavy boundary between 6" and 7" bgs, much mineral mixed in

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Salt Deposits (C5)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Microtopographic Relief (D4)
	<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X Depth (inches):	
(includes capillary fringe)	
	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> X <input checked="" type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No indicators present

Geomorphic Position:

Additional Reference Data: Overflow Vegetation

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	Absolute % Cover	Dominant Species?	Indicator Status
<b>Sapling/Shrub</b>			
Spiraea beauverdiana	5	No	FACU
Salix pulchra	4	No	FAC
Picea glauca	3	No	FACU
Calamagrostis canadensis	1	No	FAC
Betula papyrifera s.l.	1	No	FACU

Additional Reference Data: Photos

HDR8746 \_19



Photo Name: Photo\_190907143958



Photo Name: Photo\_190907144215



## Additional Reference Data: Photos

HDR8746 \_19



**Photo Name:** Photo\_190907144224



**Photo Name:** Photo\_190907144208



**Photo Name:** Photo\_190907144031

## Additional Reference Data: Photos

HDR8746 \_19



**Photo Name:** Photo\_190907144201